Governance of the German Green Belt Ecological Network
Implications for the Korean Demilitarized Zone

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Suk Kyung SHIM

Präsident der Humboldt-Universität zu Berlin
Prof. Dr. Jan-Hendrik Olbertz

Dekan der Mathematisch-Naturwissenschaftlichen Fakultät II
Prof. Dr. Elmar Kulke

Gutachter
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Acronyms and abbreviations

BfN	Bundesamt für Naturschutz (Federal Agency for Nature Conservation)
BImA	Bundesanstalt für Immobilienaufgaben (Federal Agency for Real Property)
BMF	Bundesministerium für Finanzen (Federal Ministry for Finance)
BMU	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)
BN	Bund Naturschutz
BUND	Bund für Umwelt und Naturschutz Deutschland
CBD	Convention on Biological Diversity
CCL	Civilian Control Line
CCZ	Civilian Control Zone
CDU	Christlich Demokratische Union Deutschlands (Christian Democratic Union of Germany)
CSU	Christlich Soziale Union (Christian Social Union)
DMZ	Demilitarized Zone
DPRK	Democratic People's Republic of Korea
EU	European Union
FRG	Federal Republic of Germany (Bundesrepublik Deutschland)
GB	Green Belt (Das Grüne Band, Grünes Band)
GDR	German Democratic Republic (Deutsche Demokratische Republik)
IUCN	International Union for Conservation of Nature and Natural Resources
Länder	German federal states
MDL	Military Demarcation Line
NABU	Naturschutzverbund Deutschland
New Länder	Former East German federal states
NGOs	Non-governmental organizations
NLL	Northern Limit Line
NSG	Naturschutzgebiet (Nature Conservation Area)

OECD	Organization for Economic Cooperation and Development
Old Länder	Former West German federal states
ROK	Republic of Korea
SAC	Special Areas of Conservation
SLL	Southern Limit Line
SPA	Special Protection Area
SPD	Sozialdemokratische Partei Deutschlands (Social Democratic Party of Germany)
TBPA	Transboundary protected area
TMLFUN	Thüringer Ministerium für Landwirtschaft, Forsten, Umwelt und Naturschutz (Thuringia Ministry of Agriculture, Forestry, Environment and Nature Conservation)
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

Summary

The German Green Belt (GB) is a 1,398km long, valuable ecological network along the former border between East and West Germany, created in late 1989 as an outcome of the Cold War. The exemplary project for the conservation of the German GB not only inspired the development of the European GB along the whole former Iron Curtain in Europe, but has also received great interest from Korea for the policy-learning applicable to the conservation of the Korean Demilitarized Zone (DMZ) after the eventual unification of North and South Korea. Meanwhile, the German GB has often suffered threats to its conservation, and has witnessed conflicts among involved actors, which were closely related to social and political factors such as the post-reunification policy environment, in addition to ecological factors.

The present study intends to address the above challenges as well as to understand the evolution of the conservation framework of the German GB using the governance approach, since the concept of governance is instrumental in understanding a complex socio-ecological system through interdisciplinary study. The governance analysis framework for the research was formulated in specific consideration of scale (ecological network) and external policy environment (relevant socio-political context). The data collected from semi-structured interviews as well as other various sources were used for analysis.

Based on a critical understanding of the German GB governance, the present study identifies the main features of its evolution and its success factors and challenges and recommends the desirable changes in the governance for the successful conservation of the German GB. The analysis results also provide useful implications for the Korean DMZ conservation. As an empirical study of biodiversity governance, the present study also contributes to the discourse on biodiversity governance, particularly on its scale- and context-specific considerations.

In conclusion, the present study clearly verifies that the German GB governance has been characterized by the complex and dynamic features of a large-scale socio-ecological system and influenced by its specific socio-political context. The main findings of the research include that: 1) large-scale institutional arrangements are highly necessary in the multi-level structure or decentralization approach of biodiversity governance to enhance governance effectiveness and the achievement of conservation goals; 2) as the important role of environmental NGOs in the German GB governance explicitly demonstrates, government is not the only actor that can improve biodiversity governance; and 3) a context-specific governance approach that considers the influence of the external policy environment, such as the post-reunification policy environment of the German GB governance, facilitates an understanding of complexities of governance system and contributes to better addressing its broadly interconnected issues.

Keywords: German Green Belt, Korean DMZ, governance, ecological network, border area

Zusammenfassung

Das Grüne Band ist ein wertvoller Biotopverbund entlang der ehemaligen innerdeutschen Grenze auf einer Gesamtlänge von 1393 Kilometern, welcher Ende 1989 als Folge des Kalten Krieges entstand. Das vorbildliche Naturschutzprojekt Grünes Band regte nicht nur die Entwicklung des Europäischen Grünen Bandes entlang des ehemaligen Eisernen Vorhangs in Europa an, sondern führte auch zu großem Interesse in Korea, die Naturschutzpolitik auf die entmilitarisierte Zone (DMZ) Koreas zu übertragen, nach einer eventuellen Vereinigung Nord- und Südkoreas. Allerdings litt das Grüne Band oft unter einer Gefährdung des Naturschutzstatus und an Konflikten zwischen beteiligten Akteuren, die eng mit sozialpolitischen Faktoren, z.B. dem politischen Umfeld nach der Wiedervereinigung, und mit den bestehenden ökologischen Faktoren verbunden waren.

Die vorliegende Arbeit widmet sich unter Zuhilfenahme des Governance-Ansatzes den oben genannten Herausforderungen sowie das Verständnis für die Entwicklung des Schutzrahmen für das Grünes Band. Das Governance-Konzept ist dabei durch die Verwendung interdisziplinärer Studien grundlegend, um das sozio-ökologische System zu verstehen. Für die Forschungsarbeit wurde der Governance-Analyserahmen unter Berücksichtigung der Skalen (Biotopverbund) und des externen politischen Umfeldes (betreffender sozio-politischer Kontext) gebildet. Die von halb-strukturierten Interviews und anderen verschiedenen Quellen erhobenen Daten wurden für die Analyse verwendet.

Basierend auf einem kritischen Verständnis für die Governance der Biodiversität im Grünen Band, identifiziert die vorliegende Forschungsarbeit sowohl die Haupteigenschaften als auch die Erfolgsfaktoren und Herausforderungen der Governance und empfiehlt erstrebenswerte Goverance-Änderungen für den erfolgreichen Schutz des Grünen Bandes. Die Analyse-Ergebnisse stellen auch wertvolle Lektionen für den Naturschutz der entmilitarisierten Zone (DMZ) Koreas dar. Als empirische Studie der Governance der Biodiversität trägt die Arbeit zum Diskurs über Skalen- und Kontext-spezifische Berücksichtigung bei der Governance der Biodiversität bei.

Die Analyse-Ergebnisse zeigen deutlich, dass die Governance der Biodiversität im Grünen Band durch komplexe und dynamische Merkmale eines großräumigen sozio-ökologischen Systems gekennzeichnet ist und insbesondere vom spezifischen sozialpolitischen Kontext beeinflusst wird. Die wichtigsten Forschungsergebnisse beinhalten, dass 1) das großräumige institutionelle Arrangement bei einer Mehrebenenstruktur oder einem Dezentralisierungsansatz in der Governance der Biodiversität stark erforderlich ist, um die Governance-Effektivität zu verbessern und die Ziele des Naturschutzes zu erreichen; 2) wie die entscheidende Rolle der Naturschutzverbände im Governance der Biodiversität im Grünen Band deutlich zeigt, ist die Regierung nicht der einzige Akteur, der die Governance der Biodiversität verbessern kann; und 3) der kontextbezogene Governance-Ansatz, der den Einfluss des externen politischen Umfeldes berücksichtigt, erleichtert das Verständnis für die Komplexität eines sozio-ökologischen Systems und trägt dazu bei auf die weitreichend, miteinander verbundenen Sachverhalte einzugehen. Ein guter Beispiel sind das politische Umfeld nach der Wiedervereinigung und dessen Einfluss auf die Governance der Biodiversität im Grünen Band.

Schlagworte: Grünes Band, Entmilitarizierte Zone Koreas, Governance, Biotopverbund, Grenzgebiet

요약

1989년 후반 냉전이 끝나면서 구 동서독 경계를 따라 형성된 독일 그린벨트(Green Belt), 즉 그뤼네스반트(Grünes Band)는 길이 1,398km에 이르는 국가 생태 네트워크이다. 그뤼네스반트 보전사업 사례는 유럽을 가로지르는 옛 철의 장막을 따라 유럽 그린벨트 네트워크를 추진하는 데 단초가 되었을 뿐만 아니라 향후 남북한 통일 이후 한반도 비무장지대(DMZ) 생태계 보전 정책의 선례로 관심을 받아 왔다. 한편, 훼손 위기에 처하고 관련 행위자들 간 갈등이 발생하였는데 이는 생태적인 요인 뿐만 아니라 통일 이후 정책 환경과 같은 사회·정치적 요인과도 밀접히 연관되었다.

이 연구는 그뤼네스반트 보전체계의 변화과정을 거버넌스 접근법에 따라 살펴 본다. 거버넌스 개념은 복잡한 사회·생태 시스템을 학제적으로 연구하고 이해하는데 유용하기 때문이다. 거버넌스 대상의 규모(생태 네트워크 규모; scale of the ecological network)와 외부 정책환경(사회·정치적 맥락; socio-political context)을 고려하여 이 연구에 적용할 거버넌스 분석틀을 구성하고 반구조화면접(semi-structured interviews)을 비롯한 여러 방법을 이용하여 자료를 수집하고 분석하였다.

분석 결과에 기초하여 그뤼네스반트 거버넌스의 주요 특성, 성공요인과 향후 과제를 제시한 다음, 그뤼네스반트의 성공적인 보전을 위해 필요한 거버넌스의 변화와 한반도 비무장지대 보전 정책 수립에 유용한 시사점이 제시된다. 이로써 이 연구는 생물다양성 거버넌스, 특히 이의 규모 및 맥락에 관련된 논의에 경험적 연구 사례를 제공한다.

결론적으로 필자는 이 연구를 통해 그뤼네스반트 거버넌스가 복합적이고 역동적인 특성을 지닌 큰 규모의 사회·생태 시스템이며 사회·정치적 배경의 영향을 많이 받았다는 것을 밝히고 다음과 같은 결론을 제시한다. 첫째, 생물다양성 거버넌스가 다층적(multi-level) 체계이거나 분산화된 경우에 거버넌스 효과를 높이고 보전 목표를 잘 성취하기 위해 큰 규모의 제도적 장치가 매우 필요하다. 둘째, 그뤼네스반트 거버넌스 사례에서 환경 엔지오들이 보여준 역할과 같이 정부 이외의 행위자도 생물다양성 거버넌스를 발전시키는데 크게 기여할 수 있다. 셋째, 외부 정책환경의 영향을 살펴보는 것과 같이 맥락을 구체적(context-specific)으로 고찰하는 거버넌스 접근법(예를 들어, 그뤼네스반트의 경우 통일 이후 정책환경)은 거버넌스 시스템의 복잡성을 더 잘 이해하고 상호 연계된 관련 이슈들을 폭넓게 다루는데 큰 도움을 준다.

주제어: 독일 그린벨트(그뤼네스반트), 한반도 비무장지대, 거버넌스, 생태네트워크, 국경지역

1. Introduction

> *"In Germany the Iron Curtain fell down suddenly. If the chance of the termination of the division comes to your country, you will know better from the German experiences how you should tackle it. We will stand by you with words and deeds, if you need us."*
>
> *- Speech by Johannes Rau, 3 September 2000*[1]

1.1. Background

Long-term interactions between people and their environments considerably influence the arrangement of biodiversity across landscapes (McNeely 2003: 143), providing that social and ecological systems are interconnected (Paavola et al. 2008: 8). Among the many kinds of human activities, human conflicts, such as military confrontation and war, usually have severely negative impacts on environment and biodiversity, in addition to the loss of human lives and social and economic disruption. However, such conflicts sometimes result in positive consequences for nature, such as the creation of shelters for animals and plants in newly formed off-limits areas, which may be unintentional and incidental.

The former Iron Curtain, which split Europe into east and west[2] during the Cold War following the end of World War II, is a representative example of such a phenomenon. The Iron Curtain was a political, ideological and physical barrier for almost 40 years, taking the form of a border defense with fences and military guards. Meanwhile, many habitats along the border remained untouched, since the borderlands on the eastern side were mostly depopulated and prohibited from development, and the border regions on the western side were economically and spatially isolated (Molden 2009: 14; Riecken et al. 2006: 3; Riecken, Ullrich 2009: 20).

The former inter-German border was the most prominent section of the Iron Curtain, heavily fortified with barbed wire fences, concrete barricading walls, watchtowers, spring guns, sprinter mines and automatic shooting installations (Bode 1995; Lebegern 2002). It was a nearly

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[1] It is quoted from the dinner speech of the then German Federal President Johannes Rau on the occasion of the visit by the late Korean President Kim Dae-jung on 3 September 2000 in the Bellevue Palace (Office of German Federal President 2000, translated by the author).

[2] Many Eastern European countries (Eastern Bloc), mostly belonging to the Warsaw Pact, fell under Soviet socialist influence, while Western countries from Norway to Turkey practiced social or free market economy, most of them participating in the western defense alliance NATO (North Atlantic Treaty Organization) (Molden 2009: 12).

impermeable border prohibiting the escape of East Germans to West Germany; the border was referred to as a 'death zone (Todesstreifen)' in conjunction with the Berlin Wall, resulting in the death of more than 900 people from 1949–1989[3]. To nature, however, it was a 'lifeline (Lebenslinie),' connecting 109 different types of habitats that represented almost every type of German landscape along its length of 1,393 km (Geidezis, Kreutz 2006: 48). With the fall of the Berlin Wall in 1989, the former inter-German border became an invaluable national ecological network called the **Green Belt** (hereafter GB)[4], or *das Grüne Band* or *Grünes Band* in German.

The **Korean Demilitarized Zone** (hereafter Korean DMZ), the last existing stronghold of the Cold War, is another example of a valuable ecological network created by a long national division and military confrontation. It was established in 1953 at the end of the Korean War, dividing the Korean Peninsula into North and South Korea[5]. It has since been strongly fortified against human intrusion much like the former inter-German border; as a result, the zone itself and its adjacent areas under military control have become a unique shelter to wild flora and fauna and an important nature conservation agenda of South Korea.

Germany and Korea, which were two nations in the frontline of the Cold War, sympathize with one another for their tragic histories of national division (Hwang 2000: 43). The impacts of reunification and the post-reunification policies of Germany have been subjects of interest among Korean scholars and politicians who are preparing for the eventual unification of the Koreas or a similar political change. In the mid-2000s when the German GB project gained great momentum; interest in German GB conservation began growing among Korean conservationists, considering it as a precedent for the conservation of the Korean DMZ after the end of military confrontation.

Many Korean environmental NGOs, researchers, governmental officials and teams of mass media reporters have visited the German GB sites (BUND 2008; Hangyore 2007; Hanns Seidel

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[3] This number includes border troops and the Soviet army as well as people who attempted to escape through other countries. It is difficult to indicate the exact number of victims at the inter-German border, and the estimated numbers vary drastically upon the documentation agencies. According to the German Central Investigating Agency for Governmental and Party Crimes (Zentrale Ermittlungsstelle für Regierungs- und Vereinigungskriminalität), 474 persons were killed at the inter-German border, the Berlin Wall and the Baltic See (Becker 2004: 17-18; Lebegern 2002: 9).

[4] The term 'green belt' is unrelated to the usage of the same term which refers to urban land use planning to retain areas of largely undeveloped surrounding or neighbouring urban areas.

[5] The division of the Korean Peninsula is still ongoing, while other formerly divided countries such as Vietnam, Yemen and Germany have succeeded in unification. Each country has undergone different unification processes: Vietnam by a war in 1976, Germany by assimilation to one side in 1990 and Yemen by a political agreement between both sides in 1990.

Foundation in Korea 2007; NABU Sachsen 2011). A bilateral cooperation was established between the Upper Franconian County of Bayreuth, Germany, and Goseong County in Gangwon Province, Korea in 2010, allowing the Korean local border areas to use experiences on conservation and regional development from the former inter-German border areas (Hanns Seidel Foundation in Korea 2010). The concerned Koreans were mostly interested in how German GB conservation policy was developed after the German reunification as well as its success factors, obstacles and challenges. However, lesson learning or case studies carried out with insufficient knowledge on the overall structure and relevant context of the German GB did not yield significant practical lessons.

Meanwhile, a 2001-2002 German GB habitat survey, carried out approximately 10 years after the creation of the German GB, identified both the successful and challenging aspects of GB conservation. It was estimated that around 85% of the GB area was not ecologically degraded and its function as a national ecological network was intact. The federal and Länder (German federal states) environmental ministries came to be more interested in the conservation of the GB ecological network in this period than in the early period after reunification. Additionally, the concept of German GB, which integrated ecological and historical values with regional development, inspired the development of the European GB along the entire former Iron Curtain, the largest transboundary conservation project in the world. On the other hand, the federally owned land in the German GB area could be sold to individuals to fund the budget for the New Länder (former East German federal states), posing a big threat to German GB conservation (BN/BUND 2002: 272; Frobel et al. 2009: 401). No specific institution which can ensure the long-term GB conservation has been established at the federal level and also in most relevant Länder.

Based on the above survey results as well as the background of the German GB creation, the author assumes that GB conservation has been highly affected by social and political factors in addition to ecological ones, all of which are interconnected in a complex socio-ecological system. In this regard, the concept of **governance**, which offers an instrumental tool for understanding complex socio-ecological systems through interdisciplinary study (Benz 2004a: 27)[6], can be effectively used for identifying the significant factors affecting the conservation of the German GB. Additionally, the analysis of the German GB governance can provide insight

[6] The integrative and inclusive concept of governance, which promotes the combination of insight and methods of the social and natural sciences and the consistent appreciation of context-dependence, is also aligned with the research approach of the discipline of geography (Rogers 2005: 279).

into the development of relevant policymaking by relating it to the wider historical, social and cultural context, thereby facilitating the identification of its success factors and challenges. The results of such context-specific integrative analysis can also allow in-depth and useful policy lessons for the Korean DMZ. Thus, the present study examines the conservation framework of the German GB ecological network using the concept of governance.

No academic research concerning the governance or other policy issues of the German GB has been conducted, and less attention has been devoted to the social research approach. Some ecological surveys or projects on conservation and sustainable development in the German GB have been executed by government bodies and environmental non-governmental organizations (NGOs), mostly pertaining to certain parts of the German GB. “Inventory of the Green Belt (EuE-Vorhaben "Bestandsaufnahme Grünes Band")” (BN/BUND 2002) is a report of the first and only comprehensive survey on the ecological status and conservation measures of the German GB. The present study is the first interdisciplinary research on German GB policy issues, and contributes to the discourse on biodiversity governance of large-scale ecosystems. In fact, few studies on the governance of large-scale ecosystems, particularly as an empirical study, have been carried out, while many studies have focused on the local governance of individual protected areas or natural resource systems (Graham et al. 2003: 32).

1.2. Research aims, objectives and questions

In light of the given background, the present study is guided by a primary interest on understanding the governance system of the German GB in order to assess the necessary improvements for its governance as well as to devise policy implications for the Korean DMZ in the future peaceful regime after a peace or unification treaty. The analysis of the German GB governance is also expected to contribute to empirical studies on biodiversity governance, particularly regarding a large-scale ecological network.

The research aims of the present study are as follows:

- Aim 1: To contribute to the successful conservation of the German GB;
- Aim 2: To promote a better policy preparation process for Korean DMZ conservation after unification or similar system change; and
- Aim 3: To contribute to empirical studies on biodiversity governance, particularly regarding the ecological network.

Specific research objectives that will achieve the above three research aims are:

- Objective 1: To understand the German GB governance system and identify desirable changes for its improvement; and
- Objective 2: To provide the implications for the Korean DMZ conservation policies.

Subsequently, in order to systematically operate the research and to stay committed to the research objectives, the author formulated four main research questions to be answered in the research process. They are:

- Question 1: What institutional framework was created for the German GB after German reunification and how has it evolved?
- Question 2: Who are the key actors of the German GB and how are they related to each other?
- Question 3: What are the success factors and the challenges of the GB governance?
- Question 4: What can the Korean DMZ learn from the German GB?

Concerning the geographical and temporal scope of the research, the present study examines the entire German GB at a bioregional scale, from its creation in late 1989 to the present. The German GB does not include the border along the Berlin Wall, since the German GB project addresses the areas of the former inter-German border that are connected in a network structure.

1.3. Structure of the dissertation

This dissertation is organized into eight chapters, which are each subdivided into sections and sub-sections as necessary. Chapter 1 provides an overview of the present study and explains the context, research aims, research objectives, main research questions, as well as the geographical and temporal scope of the research.

Chapter 2, focusing on the theoretical background, provides the analytical framework of the research and the research methods by which the present study is conducted. Based on the overall research approach of a governance analysis of the German GB on a bioregional scale, this chapter examines relevant theories and issues on ecological networks and governance (see Sections 2.1 and 2.2). Section 2.3 describes the analytical framework of the research, which is founded on the concepts and theories of governance and ecological networks in particular consideration of the specific ecological and socio-political context of the German GB. Section 2.4 focuses on research methods, explaining the use of qualitative research as the main research approach, followed by descriptions of specific methods used in the process of data collection

and analysis.

Chapters 3 and 4 provide background information on the Korean DMZ and the German GB, respectively, such as the historical backgrounds of their creation and each region's geographical and ecological features to aid the understanding of the following governance analysis and relevant discussions. Chapter 3 also includes a brief overview of the Korean Peninsula in which the Korean DMZ is located and outlines the institutional framework of and actors involved in Korean DMZ conservation. To facilitate context-specific policy-learning, the main features of the former inter-German border and the Korean DMZ are compared in Section 3.4.

The results of analysis on the institutional framework of the German GB are described in Chapter 5 as the first part of the governance analysis that is carried out according to the given analytical framework of the research. The research period of approximately the last 20 years is analyzed and divided into three phases based on the distinct institutional situations of each phase. Descriptions of each phase begin with an overview of the external policy environment, which serves as a background for the relevant institutional setup and changes.

Chapter 6 presents the results of analysis of the actors of the German GB and their relationships, which are vital for understanding the governance system. Following the identification of key actors in Section 6.1, their interests and roles in the governance system are assessed in Section 6.2. The major relationships among the key actors, including partnerships and conflicts, are highlighted in Section 6.3.

The analysis results presented in Chapters 5 and 6 are discussed in Chapter 7. Section 7.1 first discusses the main features of the evolution of the German GB governance, and illustrates the current success factors and challenges of the governance. Based on the discussions in Section 7.1, Section 7.2 recommends key suggestions to improve governance. Chapter 7 ends by drawing implications from the German GB and applying them to the policies for Korean DMZ conservation. Chapter 8 concludes the dissertation by synthesizing the results of the present study, evaluating the effectiveness of the research and suggesting avenues for further research made possible by this study.

The structure of the dissertation is illustrated for easy reference in Table 1.1, which also indicates interrelated research objectives and questions.

Table 1.1: Structure of the dissertation

Chapter		Components	Research objectives and questions
1	Introduction	Context, research aims, objectives and questions, structure of the dissertation	
2	Theoretical background	Ecological networks, governance, analytical framework, research methods	
3	Overview of the Korean DMZ	History, geography, ecology, comparison	
4	Overview of the German GB	History, geography, ecology	
5	Institutional frameworks of the German GB	Analysis of institutional frameworks	Research objective 1 Research question 1
6	Key actors of the German GB	Analysis of actors	Research objective 1 Research question 2
7	Discussion	Discussion of analysis results	Research objective 1 & 2 Research question 3 & 4
8	Conclusion and suggestions	Synthesis, further research	

2. Theoretical background of the research

This chapter on the theoretical background of the research introduces analytical frameworks and research methods in which the present study is grounded. The work outlined in this chapter enlightens the whole research process and paves the way for the development of its analytical structure.

The present study assumes a governance analysis of the socio-ecological system on a bioregional scale as its research approach, based on the four research questions indicated in Section 1.2. The social and ecological systems are interconnected and coupled (Paavola et al. 2008: 8), and their relationship is likely to be complex. Therefore, to study the socio-ecological system often requires an interdisciplinary approach in nature. The German GB, a subject of the present study, is an ecological network developed with social and political influences, and the present study therefore attempts to connect the governance approach to the ecological network conservation framework in an interdisciplinary way.

The following sub-chapters first examine relevant theories and issues on ecological networks and governance, which are adapted to the research aims and context. Then, the analytical framework of the research, built on theoretical discussions, is explained. The research methods used in the present study are introduced last.

2.1. Ecological networks

2.1.1. Conservation on a bioregional scale

Many problems and challenges regarding conservation occur on a large scale. Scientists, governments and local community leaders increasingly recognize that the best policy approach is to expand the geographic scale of conservation and development programmes to cover whole ecosystems (Miller 1996: 1). Many different terms are used to indicate this approach, such as regional- and landscape-scale management (Sandwith, Lockwood 2006; Jongman, Pungetti 2004), bioregional approach (Miller 1996), ecoregional approach (Boyd 2004), connectivity conservation, or biodiversity corridors (IUCN 2007). In addition, the Biosphere Reserve of the UNESCO (Miller 1996) and the Ecosystem Approach identified by the Convention on Biological Diversity (CBD) (Bennett, Mulongoy 2006) are often used as conservation models for operating the bioregional approaches (see more Boyd 2004; Bennett, Wit 2001).

The **ecological network** is another widely used term. Bioregional and ecoregional conservation

programmes as well as biodiversity corridors are forms of ecological networks (Sandwith, Lockwood 2006: 583). The bioregional approach utilizes the concept of bioregion to exhibit more clearly the character of the ecological network as an interconnected socio-ecological system. The bioregion denotes a geographic space that is characterized not only by biological resources but also by cultural, societal, institutional and political elements (Miller 1996: 4; Sandwith, Lockwood 2006: 580). Although ecological networks vary in size, including small ones such as metropolitan open-space systems within municipalities, many are large in scale and encompass a geographical region such as a watershed, a mountain range or a biome (e.g. temperate broad-leaf forest) (Bennett, Mulongoy 2006: 83; Sandwith, Lockwood 2006: 583). When an ecological network is initiated or developed as part of government policy or planning, it can be delineated by a sub-national administrative unit at the local level or an entire country (Bennett, Wit 2001: 17), as shown by the example of the German GB.

Bennett and Wit (2001) reviewed ecological network initiatives worldwide and offered an operational definition of an ecological network as:

> A coherent system of natural and/or semi-natural landscape elements that is configured and managed with the objective of maintaining or restoring ecological functions as a means to conserve biodiversity while also providing appropriate opportunities for the sustainable use of natural resources (Bennett, Wit 2001: 16).

Due to the increasing pressure of land uses to landscapes, such as road construction, housing development and intensification of agriculture and forestry, more and more valuable habitats are being degraded and fragmented into isolated pieces. Climate change is accelerating the rate of habitat fragmentation (IUCN 2007: 2). At the same time, researchers have witnessed that biodiversity loss continues despite the increase in land area under protection. The situation indicates that species require a range of habitats that are connected. Thus, the linkage between valuable habitats, usually in the form of protected areas, is becoming increasingly crucial, and ecological networks support the long-term viability of protected areas by minimizing fragmentation, retaining opportunities for the movement of wildlife and promoting nature-friendly uses of land. Protected areas are usually maintained to achieve conservation outcomes and are the backbones of ecological networks (Boyd 2004: 76). They can play an important role in maintaining the ecological integrity of ecological networks (Bennett, Mulongoy 2006: 10).

In order to achieve the conservation objectives of ecological networks, specific functions are allocated to different areas according to their ecological value and their potential as natural resources. These functions are reflected in a coherent system of areal components of the ecological network (Bennett, Mulongoy 2006: 4-5):

- Core areas, where the conservation of biodiversity takes primary importance even if the area is not legally protected;
- Corridors, which serve to maintain vital ecological or environmental connections by maintaining physical (though not necessarily linear) linkages between the core areas (e.g. linear corridors, 'stepping stones,' other forms of interlinked landscape matrices);
- Buffer zones, which protect the network from potentially harmful external influences, particularly those caused by inappropriate forms of land use, and which therefore permit in principle a range of sustainable human activities; and
- Sustainable use areas, which may surround the network and where opportunities are exploited within the landscape mosaic for the sustainable use of natural resources in conjunction with the maintenance of most ecosystem services.

Figure 2.1 shows a diagrammatic representation of this spatial arrangement. In recognition that habitat loss and fragmentation are the main threats to biodiversity, the role of corridors is becoming increasingly important. Corridors vary in size, ranging from small tunnels under a road for amphibians to intercontinental flyways for migrating birds. They also vary in form. They can be broadly categorized as follows (Bennett, Mulongoy 2006: 6; IUCN 2007: 2):

- linear corridors, which can be narrow but still provide connectivity between habitat fragments for target species (e.g. hedgerow, forest strip, river or infrastructure such as tunnels and ecoducts[7] that allow species to traverse obstacles);
- stepping stones, which are an array of small patches of habitat that can be used during movement for shelter or feeding within a landscape in which other activities, such as agriculture, are taking place (e.g. rice fields at Cheolwon Plain in the Korean DMZ, introduced in Section 3.2.3); and
- landscape corridors, which usually take the form of extensively managed landscapes that retain sufficient natural elements to allow survival during movement between habitat patches.

[7] Ecoducts, which are land bridges planted with grass and hedgerow, enable animals to cross a motorway that cuts through a forest (IUCN 2007: 2).

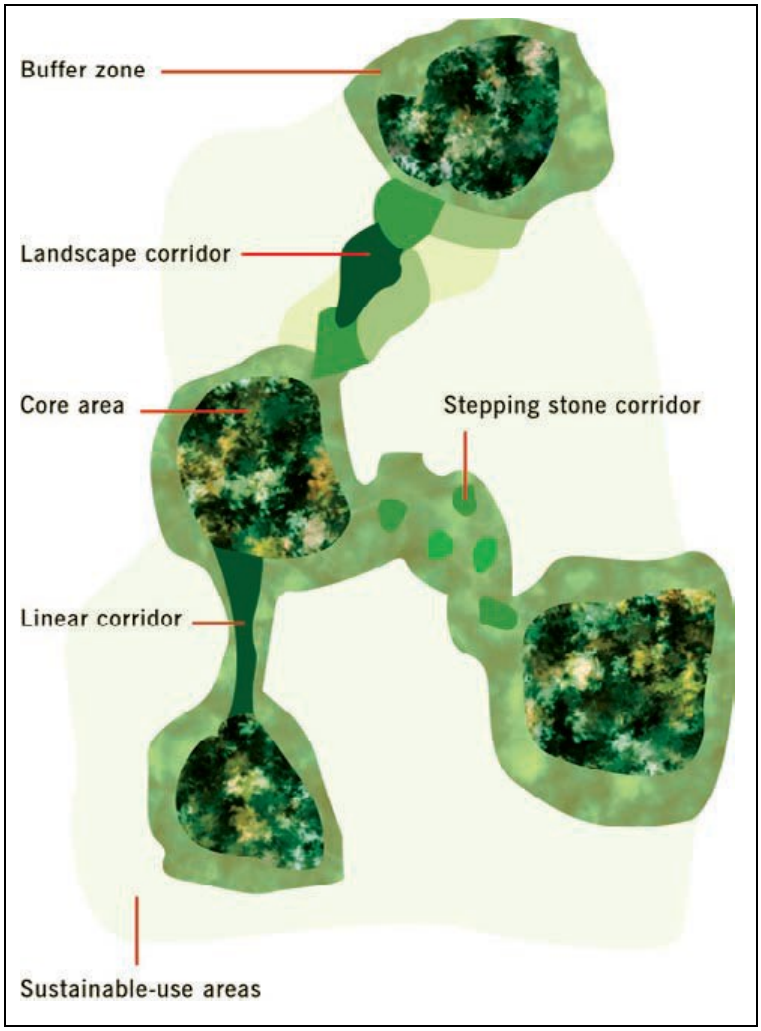

Figure 2.1: Diagrammatic representation of the spatial configuration of an ecological network

(Source: Bennett, Mulongoy 2006)

The special arrangement and the above areal components clearly show that the ecological network includes a matrix of different land uses and its management demands a coordinated effort from all levels of government as well as NGOs, local communities and private land owners.

2.1.2. Development of ecological networks

The ecological network has been developed over the past few decades as an important mechanism for achieving biological conservation, sustainable use of its components, and the fair and equitable sharing of its benefits (Boyd 2004: 73). Based on a review of 38 worldwide ecological network initiatives, Bennett and Wit (2001) distinguished the two main types of institutional and legal frameworks. One is the framework driven by non-governmental societal groups such as research institutes, environmental organizations, land owners and private foundations. Another type of framework is through government-driven action. The review identified that almost half of ecological networks were initiated by societal interest groups,

mainly environmental organizations or applied research institutes (Bennett, Wit 2001: 26).

Europe has a strong tradition of land use planning in semi-natural areas outside the protected area system. In the 1980s, the first such initiative in Estonia pioneered the concept and programmes of the ecological network in Central and Eastern Europe (Bennett, Wit 2001: 15; Bennett, Mulongoy 2006: 13). In Western Europe, Denmark first introduced the ecological network into regional planning, and the Dutch government adopted a plan for a national ecological network in 1990. In Germany, the nationwide ecological network was initiated at the Länder level under the Federal Nature Conservation Act (Bundesnaturschutzgesetz) amended in 2002 (Article 20, Section 1) (see Section 5.2.2), and the German GB was recognized as a component of the national ecological network in amendments to the Act in 2009 (see Section 5.3.2). The Act defines the objectives of the ecological network: protection, restoration and development of functional and ecological interconnectivity in the landscape, and the long-term protection of endemic species and populations and their habitats as well as the contribution to the Natura 2000 (see Box 2.1) (Article 21, Section 1).

Ecological networks have been developed not only in individual countries but also at the international level in Europe. Three ecological networks are especially worth noting: the Pan-European Ecological Network (PEEN)[8], the Transnational Ecological Network (TEN)[9] and the European GB (see Section 5.2.2). Additionally, the Emerald Network[10] has been established across Europe and Africa. The European Union (EU)'s most important biodiversity legislations, namely the 1979 Birds Directive and the 1992 Habitats Directive, also recognize the connectivity conservation. The two Directives[11] establish a representative system of legally

[8] The Pan-European Ecological Network (PEEN) aims to link the different European and national protected areas and ecological networks, or to link core areas physically through the restoration or preservation of corridors in the 54 concerned states, in the framework of the Pan-European Biological and Landscape Diversity Strategy (PEBLDS). PEBLDS was launched in 1995 when the European Ministers of the Environment met in Sofia in order to strengthen environment and biodiversity conservation policies (Council of Europe 2011b).

[9] The Transnational Ecological Network (TEN) is a cooperative project between regional governments in the United Kingdom, the Netherlands, Germany and Denmark, which focuses on wetlands and aquatic ecosystems (Bennett, Mulongoy 2006: 31).

[10] The Emerald Network, a joint programme of the Council of Europe and the EU, is an ecological network made up of 'areas of special conservation interest' under the Bern Convention (Convention on the Conservation of European Wildlife and Natural Habitats). The Bern Convention is a binding international legal instrument to conserve wild flora and fauna and their natural habitats, and has been enforced since June 1982. There are 45 contracting parties, which include all of the EU states, some non-Community states and a number of African states. The Emerald Network and the Natura 2000 are fully compatible with each other (Council of Europe 2011a).

[11] The EU law on the environment is basically shaped by directives. Directives, in principle, have no immediate legal effect in the member states of the union but have to be transposed into national law to become

protected areas known as Natura 2000. The Habitats Directive (Article 10) and the Birds Directive (Article 4(3)) stipulate the ecological coherence of the Natura 2000 network; however, few corridors have been established as a formal part of Natura 2000 (Bennett, Mulongoy 2006: 31).

● Box 2.1. Natura 2000 network

The Natura 2000 is an ecological network of the protected areas of the EU. All EU member states are requested to designate the sites for the Natura 2000 network and manage them. The 1979 Birds Directive and the 1992 Habitats Directive (in German: Fauna-Flora-Habitatrichtlinie [FFH-Richtlinie]) are the basis of the creation of the Natura 2000 network consisting of the protected areas below.

- **Special Protection Areas (SPAs)** are classified under the Birds Directive to help protect and manage areas which are important for rare and vulnerable birds, because they use them for breeding, feeding, wintering or migration.
- **Special Areas of Conservation (SACs)** are classified under the Habitats Directive and provide rare and vulnerable animals, plants and habitats with increased protection and management. Member states submit first lists of the **Sites of Community Importance (SCIs)** and SCIs become SACs when they are formally protected under national legislation.

The implementation of the Habitats Directive has been controversial from the outset. The top-down measures and lack of public consultation in designation process provoked conflicts across a number of states during the 1990s. The Natura 2000 network could not be formed in 2004 as prescribed by the Habitats Directive, because the member states, including Germany, did not comply by the deadline for SAC's designation. As of January 2011, the network comprised around 26,000 sites, covering around 18% of the total land area of the EU with around 750,000㎢ and around 17,500㎢ of marine area. In Germany, 5,266 areas are designated covering around 80,783㎢ with 15.44% of its terrestrial surface and 44% of its marine surface as of January 2011.

(Source: BfN 2008; European Commission 2011; Paavola et al. 2008)

In the 1990s, the ecological network was developed in many other countries in North America, South America, Australia and Asia (Bennett, Mulongoy 2006: 4) for their own conservation needs. For instance, the Republic of Korea (ROK) established in 2002 the Korean Peninsula

effective. If the deadline for the transposition of a directive into national law has passed, the European Commission can take a member state to the European Court of Justice. In case of the Habitats Directive, several member states such as Denmark, Finland, France, Germany, Greece, Ireland and the Netherlands were taken to the Court, because they failed to submit lists of designated sites by the deadlines according to the Article 3 (UBA n.d.: 96; Paavola et al. 2008: 12)).

Ecological Network system, which consisted of the three core ecological networks including the Korean DMZ (see more in Section 3.3.1).

2.1.3. Ecological networks along border areas

In general, conservation frameworks are affected by many factors interrelating habitat and species components to each other and also to human societies. Changes to the environment caused by humans can come not only from land use planning, but also by administrative capacity, community values, sense of place, environmental attitudes and political and economic considerations (Jongman, Pungetti 2004: 5). The combination of several measures is thereby necessary for the best methods and practices to ensure conservation goals.

The ecological network includes various forms of landscape elements; therefore, its conservation should take into particular consideration the potential and actual effects of various human activities on nature and its governing system. Some ecological networks are or can be formed along political borders, because such borders are often exempt from human activities and economic development. For this reason, some transboundary protected areas (TBPAs) transcending political boundaries were established on or around borders. The former inter-German border, the Korean DMZ and ecosystems in other DMZs (see Box 3.1) are surrounded by more complex socio-political influences due to severe conflicts on borders between divided nations.

Although most of the literature in the field of geography on political borders have paid little attention to the topic of landscape and instead focused on political and military issues, borders are no longer of interest only to political and social geographers (Vogeler 2010). The border as a site of violent conflict implies, above all, loss of human lives and social and economic disruptions. The impacts of armed conflicts on nature and biodiversity are also very destructive. However, armed conflicts or wars, or preparations for them, can bring about a positive albeit unplanned or unexpected result. The border areas are sometimes abandoned or maintained as off-limits areas and create buffer zones that provide sanctuary to at least some components of biodiversity (McNeely 2003: 144). The German GB and the Korean DMZ, which were formed surrounding political borders created during the Cold War, are perfect examples. The areas around the border unintentionally and coincidentally offered rare opportunities to create unique nationwide ecological networks providing shelter to rare and endangered animals and plants.

In viewing areas surrounding political borders in reference to the perspective of landscape, the ecological and socio-political influences of border areas need to be carefully examined and

addressed in the conservation and management of border ecosystems. The ecological influence is rather complex. On one hand, the prohibition of or strict limits against human access can allow nature to flourish and provide shelter to many species that would rarely survive elsewhere. On the other hand, security or military operations occurring on the border (e.g. regular felling, fire-setting) intervene with environmental and ecological processes. Border-related institutions as well as perceptions and attitudes of people toward the border area also influence issues and policies on border ecosystem conservation even after the removal of the border, as observed in Germany post-reunification. To identify in detail the ecological and socio-political impacts of the border areas at a landscape or bioregional scale is a context-specific and interdisciplinary task.

In summary, the ecological network is becoming significant in the discourse of biodiversity conservation, with the increasing problem of habitat fragmentation leading to biodiversity loss. Ecological networks can better achieve their full potential when their conservation is planned with a bioregional approach integrating ecological, cultural, socio-political and institutional elements, cutting across other jurisdictions and involving multiple actors. The ecological networks developed on the (former) intra-national border, such as the German GB and the Korean DMZ, demand particular attention to socio-political elements. The bioregional approach implies that the conservation and management of ecological networks cannot be accomplished solely by public authorities or the government. Governance possibilities need to broaden. The following sub-chapter introduces governance possibilities and examines how governance of socio-ecological systems such as ecological networks can be understood and analyzed.

2.2. Governance in theory and practice

Governance has been gaining more attention theoretically as well as practically in many disciplines. Having progressed from obscurity to widespread usage from about 1990 on, it is becoming one of the catchwords in social research and political discourse (Graham et al. 2003: 2; Abrams 2003: 11; Schiffer 2004: 12). This sub-chapter provides an overview of the concept of governance and its potential uses in the research of many disciplines as well as its uses in empirical studies. Then, the sub-chapter examines how governance is applied to biodiversity conservation, in particular to protected areas and ecological networks. Lastly, this section examines how governance analysis can be operational in empirical studies to provide a basis of the analytical framework of this research, explained in the following sub-chapter.

2.2.1. What is governance and why does it matter?

There are different definitions of governance and also different frameworks to identify it among disciplines and scholars. According to Benz et al. (2007b), the discourse on governance is generally rooted in two disciplines: economics, particularly institutional economics, and political science. The scientific concept of governance was initially formed in economics in the 1930s. While the economic discourse on governance emphasizes hierarchy as a structural feature that formal organizations employ against the market (private sector), the concept of governance in political science serves as a force that counters government. The concept of governance was first used in the field of international relations in political science, focusing on the forms of political steering and coordination between states. The approach was dispersed to other fields of collective action including actions within the state, and was also adopted in policy research (Benz 2004a: 16-17).

From government to governance

Many governance scholars, especially from the field of political science, highlight the difference between government and governance (Benz 2004b; Görg 2007; Graham et al. 2003; Kjær 2004). According to scholars, governance is not synonymous to government. Governance can be seen as referring to a change in the meaning of government and a new process of governing (Rhodes 2003: 15).

> The need for governance as a concept distinct from government began to manifest itself when government became an organization apart from citizens rather than a process. […] Today, however, government is seldom defined as a process; it is instead seen as an institution (or as a set of institutions), one of several societal 'players' or actors (Graham et al. 2003: 2).

While issues of public concern have become more complex and the limitations of governments more apparent, governments are considered only one of many possible actors. In order to represent and respond more effectively to public concerns, forms of governance can no longer depend solely on conventional governing structures and roles based on a centralized and hierarchical authority.

Similarly, some governance scholars make the distinction between 'old' and 'new' governance. Old governance is a traditional notion of steering society by national governments from the top down, and pays more attention to the degree of control that government exerts over social and economic activities. In contrast, new governance is about self-steering in social networks, having more to do with how national governments interact with society and questioning the

degree of self-steering in networks (Kjær 2004; 10-11).

In the context of globalization and liberalization, scholars have observed that the state (or nation) has shifted its role from provider and controller to facilitator and enabler (Paavola et al. 2008: 6). While the state maintains an important influence on many matters of public concern, some functions previously carried out by the state are being transferred to the private sector (business) and civil society (Graham et al. 2003: 4-6).

Concepts of governance

As governance has a broad spectrum of possibilities of applications, its concept is grasped and interpreted differently by each relevant perspective[12]. Hence, several concepts exist and are in use. Benz et al (2007a) distinguish the different concepts of governance by the different uses to which the term is applied: descriptive, normative, practical and analytical. Particularly, the normative and analytical approaches are often used in governance research, including policy research.

First, governance as a normative concept is often understood as a model of 'good' governing or administering. Here, 'norms' refer to the democratic accountability of rules, transparency, and autonomy of policies as well as the administration of specific interest groups. 'Good governance' has been a key concern in many realms of society. Its significance has been especially recognized by international development organizations such as the World Bank and the UNDP (United Nations Development Programme). These organizations noted a depressingly negative correlation between financial aid and growth or development in countries that received foreign aid or assistance (Graham et al. 2003: 6) and promoted good governance as a set of indispensable principles and rules.

However, it is very difficult to determine what constitutes good governance, since strictly speaking it varies according to values, cultural norms, and desired social and economic outcomes. The particular context of application needs to be seriously considered (Borrini-Feyerabend 2003: 99; Borrini-Feyerabend et al. 2006: 135). Good governance principles, such as the UNDP's five principles of good governance on legitimacy and voice, direction, performance, accountability, and fairness, have provided a practical starting point for the

[12] The emergence and development of governance concepts and their varied approaches can be broadly reviewed in the two books of Kjær (2004) and Benz (2004b).

application of the normative concept of governance. Whether the principles and norms claimed by the normative concept (e.g. principles of good governance) can be applied in reality can be examined through critical analyses of institutions and processes or the evaluation of practical examples. Such analysis and evaluation necessitates a suitable analytical framework (Benz et al. 2007b:15).

Second, the analytical use of governance pays particular attention to "the interdependency between actors and the different forms of accomplishing the interdependency in the context of institutions and societal sub-systems" (Benz et al. 2007b: 15-16). Therefore, the analytical approach can be connected with concepts emphasizing forms and mechanisms of coordination which can be generalized (Benz et al. 2007b: 16). An interaction-centred perspective is a good example, such as interactive governance (see Kooiman 2003). Other analytical approaches include the perspective of governance as networks and perspectives that seek to identify governance on different societal scales ranging from the local to the global, as well as overlapping, cross-cutting authorities and responsibilities; it includes multiple kinds of vertical governing arrangements as well as horizontal networks (Kooiman et al. 2008: 2). A focus on the interaction between actors leads to the interest in the institutional framework in which interaction takes place and which has considerable influence on its course and results (Nuissl, Heinrichs 2011: 49).

In the analytical concept of governance, governance can be a powerful tool for empirical studies in many disciplines. It can be used for comprehensive overviews of the structures and processes of collective actions of the system being studied, which are usually very complex and difficult to examine. The analytical perspective can also be used in the evaluation of existing situations with the evaluation criteria, from which the effectiveness and efficiency of the problem-solving process is identified (Benz 2004a: 27).

As introduced above, the usage of governance is broadly applicable to many disciplines and fields of research. In fact, governance occurs wherever people organize themselves – whether formally and informally – to develop rules and relationships with each other in pursuing their objectives and goals (Abrams 2003: 11). Therefore, "the concept of governance may be, in principle, applied to any form of collective action (Graham et al. 2003: 5)."

Many scholars regard the open applicability of the concept of governance to different theories as beneficial:

> Governance is a useful concept not least because it is sufficiently vague and inclusive that it can be thought to embrace a variety of different approaches and theories, some of which are even mutually contradictory (recited from Benz 2004a: 27); and
>
> The idea of governance makes it easier to have discussions about how communities or other social actors can take action in collaboration with, or perhaps independently of, established government structures to address issues of concern to citizens (Graham, 2003: 4).

Definition of governance

As examined above, scholars and organizations engaged in the different fields often employ different definitions for the term governance. It is not feasible to expect one universal definition of the term in consideration of its flexible and open features and broad applications. Nevertheless, an empirical study can introduce or adopt a definition which supports its specific aim and context. The three core elements of the definition of governance are commonly indicated as: **actors** (people) who participate in making decisions that affect them**, institutional frameworks** (systems of rules) in which interactions of people take place, and **ways of interacting** (distributions of power) in context of their environment and the systems of rules or principles (Turton 2007: 7; Swiderska et al. 2009: 18). Governance occurs in a form of **steering and coordinating** (or sometimes ruling) with the goal of managing by interdependence between actors (Benz 2004a: 25).

Governance should be distinguished from other terms which are sometimes incorrectly used interchangeably:

- *Management*: Management addresses what is done about a given site or situation (Borrini-Feyerabend et al. 2006: 116). The purpose of management is the achievement of objectives, while governance is primarily about how to achieve them, or how to determine and attain these objectives by providing the elements necessary to best assure the desired results (Jeffery 2004: 11; Stoll-Kleemann et al. 2006: 5; Simoncini et al. 2008: 5).
- *Power*: According to Swiderska et al. (2009), power determines the degree of influence that different actors can exert on policy and decision-making. Significant changes in governance require changes in the exercise of power.
- *Polices*: Organizations work with or create policies, such as formal government policies, plans and strategies as well as the laws that make them mandatory. Policy

declarations do not always lead to action (Swiderska et al. 2009: 18).

In conclusion, the concept of governance has a potential for usage in many disciplines and can further connect a discipline to different theories and methods. Benz et al. (2007b) calls it a scientific 'bridge-concept' because it enables problem-oriented communication between different disciplines and thereby supports interdisciplinary research. Governance can provide a degree of integration across various perspectives, interests, approaches and theories, some of which are even contradictory (Paavola et al. 2008: 3; Benz 2004a: 27). Coupled socio-ecological systems such as protected areas and natural resource systems are perfect examples. Such socio-ecological systems are not only highly complex individually but also interconnected (Paavola et al. 2008: 8), and various perspectives and approaches need to be examined in an integrative or holistic way. Hence, it stands to reason that governance is becoming a popular concept in the field of environment, including biodiversity conservation.

2.2.2. Governance discourse in biodiversity conservation

Similar to other sectors of society, the field of environmental policy has been in search of new forms of regulations encompassing governance and has expanded the spectrum of players (actors) to include more than the state (nation) as a response to the lack of effectiveness. Some scholars define environmental governance as a new way to achieve political objectives in which states participate but do not necessarily play a leading role (Davidson, Frickel 2004: 471) among the broadened range of actors. Others consider it as an attempt to facilitate and manage collective action and cooperation, focusing more on its goals (Paavola 2003/2004: 62) as well as to address environmental dilemmas or resolve environmental conflicts by individual governing bodies or combinations thereof (Paavola et al. 2008: 3).

Biodiversity governance can be interpreted as the way society manages its political, economic and social affairs with the aim to utilize and conserve biodiversity (Simoncini et al. 2008: 5). It is sometimes mistakenly regarded in the same light as the management of biodiversity conservation, particularly when related to protected areas, as indicated above in Section 2.2.1. The concept has been recognized in major international initiatives on biodiversity, such as the CBD (in particular, Ecosystem Approach and Programme of Work on Protected Areas), the Millennium Ecosystem Assessment and the IUCN World Parks Congresses, so that the governance concept could play a powerful and positive role for conservation and equity (Borrini-Feyerabend et al. 2006: 140; Swiderska et al. 2009: 25).

Some of the key concerns in biodiversity governance are that it has been largely centralized with

a top-down approach and has focused primarily on goals related to global conservation, often at the expense of the livelihood of local communities. This is noticeable in developing countries, where most of the world's biodiversity is found. Many empirical studies focusing on power in governance processes have been carried out in this regard. (Swiderska et al. 2009:1). The critical examination of conventional approaches to biodiversity governance ushered a significant change mainly in perspectives on protected areas and fostered the emergence of the concept of protected area governance.

Protected area governance

The majority of the literature and discussions on **protected area governance** are centred on the two issues of equity (or justice) and governance types[13]. The issue of equity in protected area governance is intimately connected to the view that the purpose of environmental governance is to resolve conflicts over the use and protection of environmental resources of protected areas (Paavola 2003/2004: 60), since governance determines the sharing of relevant costs and benefits (Borrini-Feyerabend 2003: 92). Distributive and procedural equity is important in the resolution of conflicts and choice of governance solutions, because they will influence the legitimacy and effectiveness of governance solutions (Paavola 2003/2004: 74). It is also closely related to the concern that biodiversity governance has often been centralized and top-down.

The discussions on the types of protected area governance are based on the four main types of protected area governance developed by Borrini-Feyerabend (2003; 2007). They are distinguished by one property of a governance system, that is, who holds the main authority to make decisions for the protected areas and who takes responsibility and can be held accountable for it (see Table 2.1). Recognition of the types of governance of the protected areas allows for better observation and effective understanding of the actors engaged in conservation and their power relations.

Table 2.1: Four types of protected area governance

Governance Type	Description	Sub-types by Managing Bodies
Government-managed Protected Areas	Government agencies at various levels make and enforce decisions.	• Federal or national ministry or agency in charge • Local/municipal ministry or agency in charge • Government-delegated management (e.g. to an NGO)

[13] For discussions based on the approach in the protected area governance, see the publications of Paavola, Borrini-Feyerabend (2003; 2006) and Graham et al (2003), representatively.

Co-managed Protected Areas	Various actors together make and enforce decisions.	• Transboundary management • Collaborative management (various forms of pluralist influence) • Joint management (pluralist management board)
Private Protected Areas	Private landowners make and enforce decisions.	• Declared and run by individual landowners • Declared and run by non-profit organizations (e.g. NGOs, universities, etc.) • Declared and run by for-profit organizations (e.g. individual or corporate landowners)
Community Conserved Areas	Indigenous peoples or local communities make and enforce decisions.	• Declared and run by indigenous peoples • Declared and run by local communities

(Adapted from Borrini-Feyerabend 2007)

Most of the world's protected areas are managed by governments, in spite of the significant increase of various forms of collaborative management or privately managed protected areas with the growing recognition of important roles of local communities and NGOs. There can be, however, no clear distinction made among the types nor is there one right or best option. Many more sub-types than indicated in Table 2.1 may exist in the field. An initiative for a certain type of governance may evolve into a new governance type over time (Graham et al. 2003: 15).

In the long run, a protected area system comprised of various governance types can be more effective and sustainable in filling gaps addressing complex ecological issues, such as connectivity conservation in ecological networks, and encouraging higher levels of societal engagement in protected area management (Borrini-Feyerabend et al. 2006: 142). How to arrange or coordinate cooperation across different governance types becomes one of the main challenges in improving governance.

The history of discourse on protected area governance is just about a decade long and examples of practical applications are not abundant. It has mostly been examined at local levels and appropriate for protected areas of limited size and local value (Borrini-Feyerabend et al. 2006: 122). Protected area governance needs to be applied in diverse protected area systems in practice and elaborated more in consideration of key issues of governance, such as scale, which is examined below.

Scale as a key analytical issue in biodiversity governance

One of the popular discussions on environmental governance is on how to enhance participation of civil society actors in environmental decision-making. The participation of non-governmental actors is growing, and the increasing number of its forms has been in line with the emergence

and development of governance, as described in Section 2.2.1. An issue of **scale** is becoming another key theme of interest and significance in environmental governance, including the governance of biodiversity and natural resource systems[14]. Its significance was also emphasized in the conservation of connectivity relating to ecological networks.

A socio-ecological system "functions as a nested, hierarchical structure with processes clustered within subsystems at several scales" (Ostrom, Janssen 2004: 250). Thus, it is necessary to adapt the level and spatial scales of governance to that of the environmental problems or goals (Newig, Fritsch 2008: 3; Görg 2007: 956). Scale is defined as the spatial, temporal, quantitative or analytical dimensions used to measure and study various phenomena. A closely related term, '**levels**,' refers to locations along a scale. Many conceptual scales contain levels that are ordered hierarchically, but not all levels are necessarily linked to one another in a hierarchical system (Gibson et al. 2000: 218-219; Cash et al. 2006). The most acknowledged scale is the spatial (geographical) scale (e.g. patches, landscapes, regions and the globe)[15]. Spatial scale is one of the major elements of geographical research, and geography's disciplinary identity largely comes from their explicit consideration for spatial relationships. With research related to global change, the linkage between spatial and temporal scales has been increasingly noted (Gibson et al. 2000: 226).

Environmental problems have different and mostly distinctive spatial scales. It is becoming ever more important to take scale into account in the search for policy responses. It has been proposed, and partly enacted, to adapt the scale of governance to that of environmental issues in order to respond effectively to environmental problems (Görg 2007: 955; Newig, Fritsch 2008: 3). A number of levels of governance can exist and they are distributed vertically or horizontally (Kooiman et al. 2008: 2; Paavola 2008: 9) consisting of a complex system of decision points.

Multi-level governance is characterized by multi-level structure and other forms of interaction and coordination between different actors. Thus, more activity levels of policy and a wider range of actors are involved in governance. For instance, in a multi-level governance model, the federal (or national), federal state and local levels can show stronger cooperative relations with private actors (Müller 2009: 33). Multi-level governance is supported by decentralization, or the

[14] The relevant literature includes: Folke et al (2007), Kooimin (2008), Cash et al (2006), Görg (2007), Paavola et al (2008) and Borrini-Feyerabend (2007).

[15] There are different scales and levels that are also critical for understanding and responding to human-environmental interactions, such as temporal (e.g. rates, durations, frequencies), jurisdictional (e.g. towns, states or provinces, nations), institutional (e.g. regulations, laws, constitutions), management (e.g. tasks, projects, strategies) and networks and knowledge (Cash et al. 2006).

increased participation of non-state actors in decision-making and the shift in responsibilities from the public to the private sector.

Governance in multi-level structure can emerge from two different kinds of processes: bottom-up processes and top-down processes. In bottom-up processes, federations or overarching institutions can be created to coordinate the functioning of smaller-scale governance solutions, some of which are informal. For example, Dietz et al (2003) and Ostrom (2009) identified through empirical research that natural resource users may self-organize to maintain their resources by investing their time and energy to achieve sustainability. Top-down processes create many formal multi-governance solutions. For instance, federal conservation policies provide for or mandate the establishment of implementation programmes at the federal state level (Paavola et al. 2008: 7). The EU-level conservation regulations (e.g. Habitats Directive) are a representative example (see Box 2.1).

The evolvement of the multi-level governance in Germany resembles the top-down process, particularly within the processes of integrated regional development, whose projects are cross-sectoral and negotiated among national, organizational and private partners. The region was accepted as partner, not necessarily because the openly equitable exchange of participants was taken seriously, but because the programme requested equitable partnership under influence of all relevant regional actors through the political pressure of supporting bodies such as the EU Commission (BfN, 2006: 60-61).

While the approach of multi-level governance is increasingly influential, particularly in environmental issues, there are concerns that complex multi-level governance systems may hinder governance effectiveness and efficiency due to the involvement of multiple administrative levels and clearance points (Newig, Fritsch 2008: 9; Dietz et al. 2003: 1910). On the other hand, as diversity is regarded as a stabilizing element in systems-oriented approaches, a multitude of horizontal and vertical decision points has an advantage in better adapting to external change and uncertainty, particularly in situations involving numerous causal interactions between levels of decision-making (Newig, Fritsch 2008: 10). Some scholars believe that there are still many successful examples suggesting a strong correlation between the number of involved governance levels and environmental output quality as well as negative examples of mono-centric governance that relies exclusively on single-level, centralized command and control, or imposed markets[16]. However, empirical research on the relationship

[16] The related examples are briefly introduced in Newig et al (2008), Cash et al (2006), and Dietz et al (2003),

between multi-level forms of governance and its effectiveness or environmental outputs is still limited. In any case, scholars still agree that the systems addressing issues of scale and the dynamic links across levels are more successful in assessing problems and finding more politically and ecologically sustainable solutions (see Cash et al. 2006).

In summary, governance also became a powerful concept in biodiversity conservation discourse, and protected area governance is one of the most representative applications of governance to conservation programmes. The scale of environmental issues or problems needs to be emphasized in environmental governance, which is characterized by multiple complex relations of the socio-ecological system. For instance, ecological networks at large scales tend to involve diverse actors and complex institutional arrangements at different scales and levels. In this regard, a governance approach with a strong perspective of scale, such as multi-level governance, can provide a suitable analytical framework to empirical studies of biodiversity governance.

2.2.3. Governance concept as an analytical tool

Many disciplines have paid attention to governance and used it to broaden and elaborate discourse theoretically and practically. It can be more powerful in interdisciplinary studies, such as studies involving complex socio-ecological systems, as described in Section 2.2.1. In empirical studies, the analytical concept of governance opens up alternative ways to gain a better understanding of the structures and processes of interaction between actors as influenced by institutional frameworks. It helps answer questions such as: who is involved, who holds the decision-making authority and responsibility, what structures, institutions and relationships are concerned, and how they function (Abrams 2003: 9).

From the definition of governance in Section 2.1.1, the basic elements of governance for a governance analysis were presented: (i) actors who participate in making decisions that affect them, (ii) relationships between actors and (iii) institutional frameworks, or systems of rules. All of these elements should be identified and examined (Nuissl, Heinrichs 2011: 53).

It is crucial to identify the **actors** involved in the interactions of policy processes as well as to investigate their interests, roles and characteristics. An actor is defined as a person or corporation that carries out one or more of the activities in the governance system. Actors are

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etc.

actually involved in the policy process, and their choices will ultimately determine policy outcomes. They are characterized by specific capabilities[17], perceptions, preferences and action orientations, and influenced by institutional settings. For instance, governments and their administrations exert an important influence on public matters; however, in the conservation field, other actors are also powerful, such as NGOs, indigenous peoples and scientific and local expert groups (Stoll-Kleemann et al. 2006: 4).

Systems analysts as well as most scholars of governance prefer the term 'actor.' Interchangeable terms include 'social actors' and 'stakeholders.' Social actors can be defined as those with the capacity to make decisions and act on them; this term is more often used in the social sciences (Ramirez 1999: 101). While the previous two terms are associated with activities such as decision-making, the term stakeholders focuses more on the interest or stake in a particular issue or system and is usually used in business literature and natural resource management fields (Grimble, Wellard 1997: 175; Ramirez 1999: 101). Since the present study aims to gain an understanding about the governance system of the German GB, which is influenced and determined by activities of agents, this study uses the term actor.

Next, **institutional frameworks** or institutions are defined as systems of rules that structure the course of actions that a set of actors may choose (Scharf 1997: 38). Whereas institutions are made and changed by actors, "the rules affect and, occasionally, determine the actors' decisions and hence the course of action (Nuissl, Heinrichs 2011: 54)." Institutions can be formal or informal. Formal institutions are written as laws, regulations, plans and administrative procedures. Informal institutions are of specific relevance to cultures and include conventions, traditions and social norms that actors generally respect (Scharf 1997: 38).

Although some scholars extend the meaning of institutions to include organizations or corporate actors, institutions are also distinct. While organizations refer to social entities that are capable of purposive action, institutions are the rules, regulations and other long-established patterns of conduct or customs through which people interact with one another (Scharf 1997: 38; Swiderska et al. 2009: 18). From the perspective of actors, actors are often subject to several institutions - formal and informal - that are at times in conflict.

In addition to actors and institutional frameworks, features related to context need to be

[17] In this context, capabilities mean "all action resources that allow an actor to influence an outcome in certain respects and to a certain degree" (Scharf 1997:43).

precisely identified for the practical use of the concept of governance (Benz 2004b: 27). Governance is linked to specific circumstances. On this account, the **external policy environment** and its influence on governance need to be identified and examined in the analysis process of actors and institutional frameworks. The external policy environment here encompasses economic, political or social situations and their changes which are hardly affected by actors but significantly influence the governance system in consideration (e.g. post-war, big change of political system, oil-price shock). It can affect governance by modifying the effect of institutions on public policy (Scharf 1997: 22) and influencing the perceptions and attitudes of actors in various and dynamic ways.

Leibenath et al (2008) explains external policy environments using the term structural and situational contexts, or non-institutional factors rarely influenced by actors, in the discussion of transboundary cooperation in the establishment of ecological networks. Aspects of structural context are, for example, the geographic size of the cooperation area, the quality of transport systems and communication infrastructures, and the level of economic development. Situational contexts can be shaped by disasters such as natural or technical hazards or by the election of a new government (Jaššo 2008: 84-85). The perspective of external policy environment is highly applicable to the German GB, which was largely influenced by the socio-political environment characterized by the long-term national division, a sudden reunification and post-reunification process.

In summary, actors, relationships between actors, and institutional frameworks constitute the essential elements of governance, and governance analysis can be practically operational by examining each of those elements in empirical studies. Additionally, the external policy environment that affects institutional frameworks as well as actors needs to be integrated into the analysis process.

2.3. Analytical framework of the research

Both the ecological network, considered in a spatial aspect, and governance as an analytical concept were introduced and examined above as background concepts and approaches for the examination of the German GB governance. They serve as the foundation of and justification for the analytical framework of the research elaborated in this sub-chapter. By applying the concepts and approaches to the specific ecological and social context of the German GB, the analytical framework of the present study is guided particularly by the two following analytical perspectives: geo-ecological (relating to a large-scale ecological network) and socio-political

(relating to influence of external policy environment).

The geo-ecological perspective is based on the spatial reference of the German GB, i.e. large-scale ecological network**.** The ecological network has distinct features in terms of structure, planning and management. Although considerable research has been carried out regarding such features, rather little attention has been paid to the aspect of governance. In reference to the concepts and main practical considerations of ecological networks and governance, as elaborated in Sections 2.1 and 2.2, the issue of scale is commonly emphasized and needs to be significantly reflected in the governance analysis of the ecological network system.

Ecological networks are generally created and operated at the landscape, regional or bioregional scales. They involve a long-term process with attention to connectivity, operate across an array of administrative units, and embrace a large number and wide range of actors. This implies that the development, realization and management of an ecological network need to place high demands on institutional frameworks and process management (Bennett, Mulongoy 2006: 91; Sandwith, Lockwood 2006: 580). Hence, it is desirable that the scale of governance adapts to that of the ecological network. The large scale of the ecological network usually involves multiple levels of governance, which are responsible for influencing the protection and use of biodiversity and natural resources of the concerned territories. How the multi-level form of governance is structured and functions can considerably affect the effectiveness of governance and the achievement of conservation goals.

Next, the socio-political perspective must be emphasized. Social and ecological systems interact and co-evolve. Biodiversity governance needs to establish compatibility between ecosystems and social systems (Kluvánková-Oravská et al. 2009: 188). The socio-ecological perspective as applied to this analysis of the German GB governance includes more dimensions of analysis due to the creation and development of the ecosystem surrounding the former inter-German border strongly influenced by external policy environment such as national division, an armed border, a sudden reunification and the post-reunification process.

The way external policy environment influences social and ecological systems is varied, context-specific and dynamic. The influences and interconnectedness of the main factors consisting of external policy environment, such as the ones relevant to the German GB as listed above, cannot be disregarded, unless the governance analysis is confined narrowly to the examination of institutions and actors within the system to be studied. Hence, the present study highlights the socio-ecological perspective by considering the external political environment in the analysis process.

As no standard methodology exists for governance analysis, it should be structured with the guidance of the analytical concept of governance and other related concepts, the context in which the system is situated, and the aims of the analysis. That is, such an analysis should take context- and content-sensitive consideration of the issues and problems at hand (Nuissl, Heinrichs 2011: 56).

The methodological overview of the research is presented in Figure 2.2. First, the research aims and objectives were formulated (see Section 1.3.). The tasks to be completed during the research process were specified in the research questions. Based on the data collected for analysis (see Section 2.4.), the analysis and practical applications of data results were carried out according to the procedure:

- *Examination of the German GB governance system*: A comprehensive overview of the German GB governance system was carried out based on the governance concept as an analytical tool explained in Section 2.2.3. The three basic elements of governance (actors, relationships between actors and institutional frameworks) were examined. First, the evolution of the institutional frameworks of the German GB for the last two decades was examined for the time period characterized by the distinct policies regarding the German GB with a brief overview of the external policy environment. Next, the key actors of the German GB were identified, and their interests and roles in the decision-making process and the relationships between these actors were elaborated.

- *Identification of the features, success factors and challenges of the German GB governance*: The main features of the German GB governance changes as well as success factors and challenges of the present governance situation were identified based on the results of the German GB governance overview.

- *Recommendations for the improvement of the GB governance*: Governance solutions, which are needed for the governance to function more effectively and efficiently, were recommended based on the identified governance features, success factors and challenges.

- *Policy implications for the Korean DMZ*: Finally, in the aspect of policy-learning, the results of the governance analysis were used to identify implications for the conservation of the Korean DMZ in a future peaceful regime or the preparation for it.

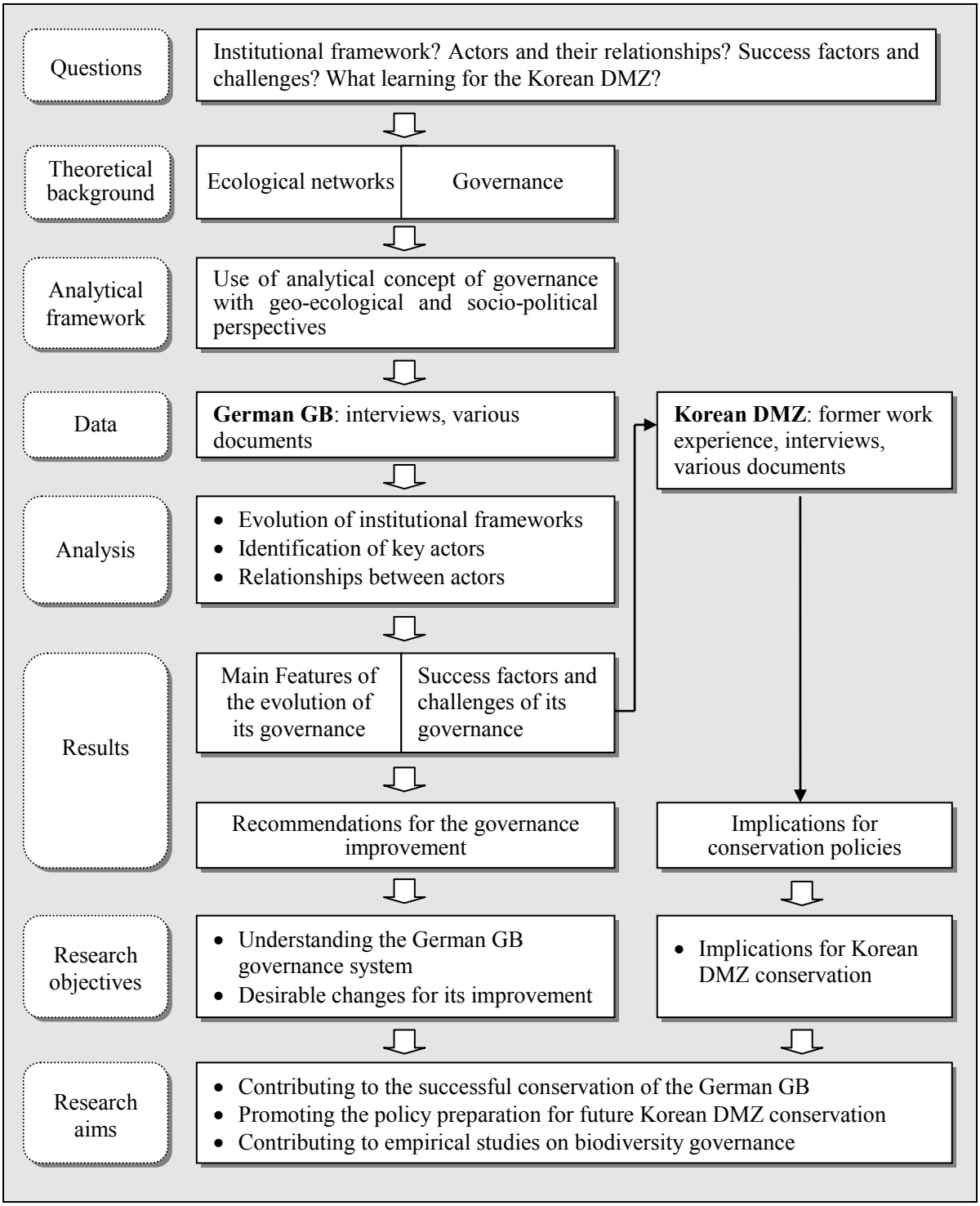

Figure 2.2: Methodological overview of the research

2.4. Research methods

Research methods in the social sciences, including the field of geography, are basically divided into quantitative and qualitative approaches. **Qualitative research** typically focuses on the description and interpretation of social phenomena using words rather than quantification (e.g.

frequency, magnitude) in the collection of data and the presentation of results. Thereby, it allows the researcher to adapt his or her methodology flexibly to the particular features of the situation being studied. In qualitative research, concepts and theoretical elaborations emerge out of data collection in an inductive way, while quantitative research emphasizes the testing of theories with quantifiable data (Bryman 2001, 284-285). The interest of qualitative research lies often in discovering concepts and relationships.

The choice of research methods relates closely with the nature of the main question and purpose of the research. The present study, first of all, aims to understand and comprehensively describe the governance system of the German GB, given that governance is an outcome of interactions between actors and social structures (i.e. institutions) in a dynamic state. The examination of governance can be carried out in practice by collecting and interpreting data relating to the actors and institutions of the German GB, which are mostly unquantifiable. Therefore, by taking a qualitative research approach, the present study can reach critical and practical conclusions on the governance system of the German GB.

Any research is based on certain philosophical assumptions, whether the author recognizes or ignores this fact. Such assumptions are implied in the author's choice of method, theories and approaches and, particularly in case of geographical research, conception of the nature of relationships in society (Graham 1997: 27). Ontologically, qualitative research is based on **constructivism**. Constructivism (or constructionism) asserts that social phenomena and their meanings are continually being accomplished by social actors. It implies that social phenomena and categories are not only produced through social interaction but that they are in a constant state of revision (Bryman 2001: 18).

Furthermore, the theory of **structuration** by Giddens (1984) emphasizes the duality of structure in which the relationship between individuals and structures is taken to be reciprocal. "The structural properties of social systems are both the medium and outcome of the practices they recursively organize (Giddens 1986: 25)"; human agents (actors) are seen both as operating within a specific social context (structure) and as active in determining the precise outcome of their social interactions. In other words, structures, through a host of institutional arrangements, both constrain and enable human actions, while human agents (actors) reconstitute and may change both institutional arrangements and structures (Graham 1997: 25). Giddens (1986) indicates that the three levels in the analysis of society are structures, institutions and agents. The author assumes that governance can be correlated to structures of the three levels.

A research process generally consists of three major components: data collection, data analysis

and the report of results as its final output. The specific methods used in each process of this research are described below.

Data collection

Primary data for the research were collected through interviews, which are the representative qualitative research methods as well as field visits to the German GB and other methods of data collection. Various documents were collected and reviewed continuously throughout the research process.

(i) Interviews

The main purpose of the interviews was to obtain knowledge, attitudes, opinions, past experiences, and expectations for the future of the key actors relating to the conservation framework of the German GB. Some interviews were conducted with experts engaged in the conservation of the Korean DMZ to supplement and update of development of relevant issues to the author's existing knowledge.

Interviews were carried out with 26 experts: 20 in Germany and 6 in Korea. Experts were categorized as overview experts or ground-level experts according to their expected knowledge on and involvement in related activities and projects. Overview experts work on a national level and have knowledge about overall policy processes, institutions and governance. Ground-level experts have in-depth knowledge and experiences on relevant activities or projects on the sites, and most of them work for regional or local administrations or NGOs.

Interviews with local people were not carried out, because the present study does not focus on the local level but covers a nationwide bioregional scale. For the views and attitudes of local people as participants of actor relationships, relevant questions were included in the interviews with experts, and many other documents and information materials such as survey reports, NGOs' newsletters and newspaper articles were used. Additionally, the present study used informal conversations with local people during field visits.

Semi-structured interviews were conducted for this research. In contrast to the structured interview (also called the standardized interview) usually used for quantitative research, interviews in qualitative research are generally semi-structured or unstructured. The two kinds of interviews are also called 'closed-ended' and 'open-ended' interviews, respectively. Some social scientists are very critical about structured (closed-ended) interviews through administered questionnaires. They argue that the structured interviews are rarely accompanied by a critical discussion of methodological problems and are often unreliable and not valid. For

instance, questionnaires tend to be overfilled with questions and poorly understood by respondents, and interviewers can administer them mechanically, encouraging casual replies or biased answers (Abrams et al, 2003: 83-84).

In a semi-structured interview, the interviewer typically has a series of questions in the general form of an interview guide, but can also ask further questions in response to the given answers. This type of conversational interview allows interviewees to construct their own accounts of their experiences by giving answers in their own words, and offers the chance for the researcher and interviewee to have a more wide-ranging discussion than when using a questionnaire (Valentine 1997: 111). As was the case for the present study, the most useful strength of this approach is that interviewees can raise issues that the interviewer may not have anticipated.

Although each interview guide of the present study included somewhat different questions depending on the interviewee's area of specialty and work, the guides generally consisted of themes such as: the interviewee's background as related to the research subject, past and ongoing projects or activities, actors and the relationships between actors, and opinions on success factors and visions. The interviews for ground-level experts included additional questions on local governance, the attitudes of local people and their specific activities. Interview guides and a list of interviewees are presented in Appendices I and II.

Having begun the interviews with the people who were coordinating the German GB project nationwide or participating in main policy process, the author recruited further interviewees with the help of initial or former interviewees as well as through the literature survey. The interviewees were contacted first with a letter briefly introducing the research and the purpose of the interview. Interviews began with general descriptive or factual questions, so that the interviewees could comfortably lead the conversation to their topics of interest and talk freely about them. The order of questions was sometimes varied according to the context of the conversation. Most conversations were recorded with a digital recorder with permission from the interviewees[18], and notes about the main content of the interviews were taken during all of the interviews. The author could listen to the conservations again at a later time, transcribe the interviews and use transcribed texts. After completing the interviews, thank you letters were sent to the interviewees, with follow-up questions or requests for additional information or materials, when needed.

(ii) Observations and field visits

[18] All of the interviewees gave permission to record their interviews.

Some interviews were carried out intensively during longer stays by the author as well as during field visits to the German GB in Saxony (Vogtland), Saxony-Anhalt (Salzwedel) and Thuringia (Sonneberg). The interviewees who were working for the German GB projects in these areas guided the field visits. In addition, the author participated in relevant meetings and events as discussant, presenter or observer (see Appendix III) and experienced hiking trails of the German GB by bicycle (Thuringia – Bavaria)[19]. In these occasions, observations were carried out in a less-structured way to understand the behaviours, attitudes and activities of actors as well as the natural environment of the German GB. Additionally, some occasions made conversations with local people (e.g. hoteliers, shepherds) possible. For research relating to the Korean DMZ, the author was able to utilize the previous experiences of research on and field visits to the Korean DMZ and the surrounding region that were made before the present study.

(iii) Other types of data collection

Many different kinds of documentary sources were used, including official documents from the government and other organizations such as survey reports, meeting reports, questionnaires, presentation papers of various individuals, mass media outputs, maps, photos, promotional materials, and so forth. These data were employed to draw on as many possible different perspectives and sources and to try to maximize the understanding of the research questions; this process is known as 'triangulation' (Valentine 1997: 112). Triangulation refers to an approach to use more than one method of investigation and sources of data so as to gain greater objectivity and accountability in qualitative social research (Bryman 2001: 274).

On the 20th anniversary of the fall of the Berlin Wall in 2009, the German GB came into the spotlight and became much more frequently covered by mass media. Forms of mass media outputs included documentaries on the nature of the area, interviews with project initiators and local participants, reportage on ongoing activities for conservation and regional development, and so forth. Such mass media coverage helped the author to stay updated on the actual progress of the main German GB policies (e.g. negotiations on the transfer of federal land between the federal government and the Länder) and supplemented the interests and opinions of the key actors.

Data analysis

[19] The experience of a bicycle hiking trail was carried out from 2–4 June 2009 mainly along the border between Thuringia and Bavaria including the German GB hiking trail established by the Warterburg County, Thuringia (Grenzwanderweg in der Warterburgregion).

Many different approaches or frameworks are available for analyzing qualitative data. In general, they involve reading, annotating, categorizing and organizing information with respect to a theoretical framework for greater understanding of events and actions (Dey 1998). The grounded theory by Strauss and the qualitative content analysis (Qualitative Inhaltsanalyse) by Marying, in particular, are representatives among those widely used (See, e.g., Bryman 2001; Mayring 2002; Mayring 2008; Strauss, Corbin 1999).

Although **grounded theory** has changed over the years, it can be, by most recent developments, defined as "theory that was derived from data, systematically gathered and analyzed through the research process. In this method, data collection, analysis and eventual theory stand in close relationship to one another (Strauss, Corbin 1999: 12)." The most central feature of this theory is that data collection and analysis proceed in tandem, repeatedly referring back to each other (Bryman 2001: 390). The approach of grounded theory helped the author to build the analytical framework of the research, to better adapt to the system studied based on the accumulated data during the research process.

Qualitative content analysis, according to Marying (2000; 2002), is an approach of systematic text analysis that is empirically and methodologically controlled, following step-by-step models and specific analytical rules. Within the approach, there are three general forms of interpretation (Mayring 2008: 58):

- *Summarization* aims to reduce the material so that the essential content remains to form a clear corpus through abstraction, which still retains an image of the raw material;
- *Explication* aims to bring additional material to particular text components in question. The material broadens understanding of as well as defines, illustrates and interprets the text components; and
- *Structuring* aims to filter particular aspects from the material and make a profile of the material under previously determined criteria or assess the material based on particular criteria.

The present study, however, does not rely wholly on a certain type of analysis method; instead, it applied and selectively combined the useful procedures and techniques of the methods, referring to other relevant research. During the analysis, the author also reflected her own subjective interpretations, observations and impressions of the data.

The research data from interview conversations, which were generated by research processes, were analyzed in the following manner. First, the recorded conversations were transcribed. The

interviews held in German were typed in a word-for-word manner, while the interviews conducted in English and Korean, in which the author is fluent, were summarized with key content in full sentences. Second, underlying themes in the transcribed conversations were extracted. The extracted themes were illustrated with brief quotations or key words besides the text in order to clarify the essential content and then to formalize into categories. The categories consisted of the sub-themes of the research questions and other salient or recurring themes that appeared worth pursuing. Next, a separate table was made with the categories and topics for the clear arrangement and easier classification of data. Thus, the main findings became available for answering the research questions and describing other parts of the research.

For some sentences that needed more clarification, the author consulted additional materials from relevant literature for better understanding. If the sentences were outstandingly well expressed or very relevant for representing the general viewpoints of the certain groups or actors, they were marked as quotations to be used.

3. Korean Demilitarized Zone (DMZ)

This chapter intends to aid the understanding of the Korean DMZ and serves as a backdrop to contain the implications of the German GB governance for the conservation policy planning of the Korean DMZ that will be specified in Chapter 7. For that purpose, this chapter introduces the geographical, ecological and social situation, including the background surrounding the creation of the Korean DMZ, and the related institutions and actors mostly focused on South Korea[20]. The comparison to the former inter-German border at the end of the chapter will highlight the social, economic and natural characteristics of the Korean DMZ.

3.1. Geographic setting of the Korean Peninsula

The Korean DMZ is located in the middle of the Korean Peninsula, dividing North and South Korea. This sub-chapter gives a brief introduction to the Korean Peninsula to serve as background information on the Korean DMZ, focusing on its geography, such as location, topography, climate and vegetation distribution as well as basic data on North and South Korea.

Location

South Korea (Republic of Korea: ROK) and North Korea (Democratic People's Republic of Korea: DPRK) are located on the Korean Peninsula, which spans 1,100km vertically. The Korean Peninsula lies on the north-eastern section of the Asian continent, sharing its northernmost border with the People's Republic of China and the Russian Federation, and also neighbours Japan across the East Sea (also called the Sea of Japan) to the east (see Map 3.1). The latitude is between 33˚06′43″N and 43˚00′42″N and the longitude is between 124˚10′51″E and 131˚52′22″E. The latitude of the northernmost tip of the Korean Peninsula corresponds to Rome and the southernmost tip the Sahara Desert (Hwang 2000: 175). The total land area of the Peninsula is 223,098 km^2㎢ (National Geographic Information Institute 2010), which is roughly double the size of former East Germany (GDR), or approximately the size of Great Britain[21]. The ROK occupies 100,032 km^2, about 45% of the Peninsula's area (Korean Culture and Information Service 2010: 16).

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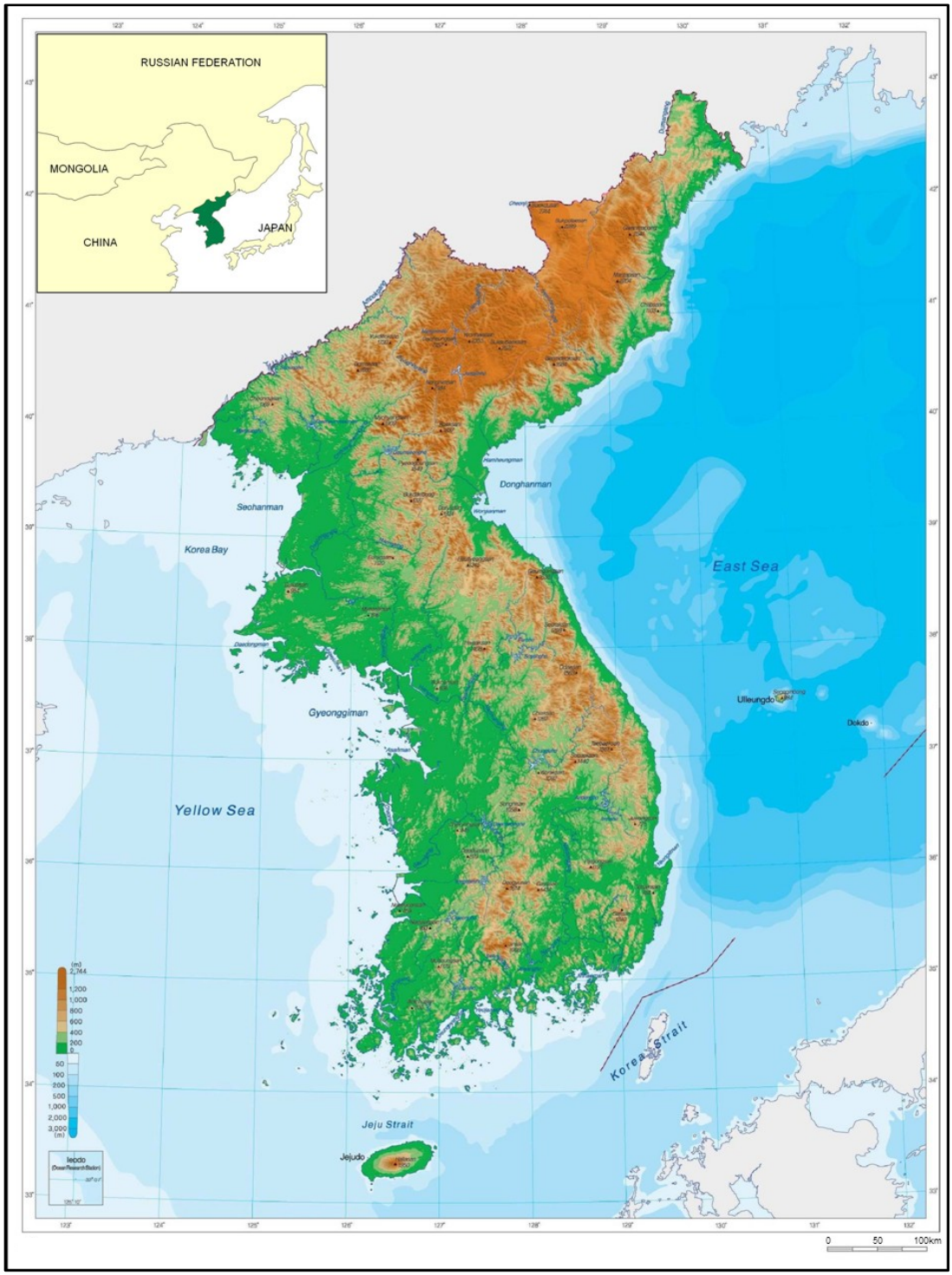
[20] The relevant information on the North Korean side is extremely limited and North Korea has shown no interest on the ecological conservation of the Korean DMZ.

[21] For reference, the land area of the Germany is 357,123.5 km^2 as of 12 December 2009 (Statistische Ämter des Bundes und der Länder 2011).

Topography



The map is slightly changed with inclusion of the location map from the original map of the National Geographic Information Institute.

Map 3.1: Location and topography of the Korean Peninsula

(Source: National Geographic Information Institute 2011)

The basic topographic relief of the Korean Peninsula is considered to have been formed by

intensive tectonic movement at the end of Tertiary era (Hwang 10.02.2000: 5). About 70% of the Korean Peninsula is mountainous or hilly, and the distribution of mountain ranges dominates the overall pattern of landforms. The north-eastern part is the most rugged area with the highest mountain range, Baekdusan (Mt. Baekdu), also known as Mt. Changbai in China, with the peak altitude at 2,744m. The Baekdudaegan (Baekdu Mountain Range) rises to over 1,500m on the eastern side of the Peninsula and then drops abruptly toward the East Sea with little or no coastal plain. In the central zone, moderately high mountains dominate the landscape. On the western side of the peninsula, mountain slopes are rather moderate, forming lowlands; the western coasts are deeply indented with many islands and harbours. The topographical characteristics of the peninsula, such as the steep eastern and gentle western slopes, result in great regional differences for flood potential. There is rapid runoff to the ocean in the east, but frequent flooding in the west. In total, some 3,200 islands exist surrounding the Peninsula (National Geographic Information Institute 2011).

Climate

The climate of the Korean Peninsula is temperate with four distinct seasons. It is dominated by the Asian monsoon system, which is induced by the heat contrast between the Eurasian continent and the Pacific Ocean. The annual mean temperature ranges from 10-16 degrees Celsius, which is lower than that of other countries at similar latitudes despite the moderating influence of the bodies of water surrounding the peninsula. The complex topography with large extents of mountainous areas as well as the long north-south distance affects local and regional climates. The average annual precipitation is about 1,245mm. The southern part of the peninsula records 1,000 to 1,800mm of precipitation, and the central region 1,100 to 1,400mm (Korean Culture and Information Service 2010: 19), with 50 to 60% of the annual precipitation concentrated in the summer months between June and September (National Geographic Information Institute 2011).

Vegetation distribution

Temperature, which varies with latitude and altitude, is the most important factor influencing the vegetation distribution of the Korean Peninsula. Both northern and southern flora are present on the Peninsula, since the Korean Peninsula served as a migration route and refuge during both the glacial and interglacial periods (Ministry of Environment of Republic of Korea 2009: 59). The Peninsula contains four horizontal vegetation zones: the evergreen (non-deciduous) broad-leaved vegetation zone, deciduous broad-leaved vegetation zone, mixed deciduous vegetation

zone and evergreen coniferous vegetation zone.[22]

The evergreen broad-leaved vegetation zone, which is the transitional zone between the tropical and warm temperate regions, is distributed at the southern tip of the Korean Peninsula and islands, including Jeju Island. The deciduous broad-leaved forest can be found over the central region representing the vegetation of the natural forests of the ROK. The mixed deciduous forest is distributed over the valleys and the slopes of mountains where granite gneiss is exposed. It is subdivided into three zones (southern, central and northern) on the basis of geographical location and composition of vegetation. The evergreen coniferous vegetation zone is found in the high plateau and alpine belt of northern Korean Peninsula. Due to development and large-scale forest fires, many native conifer forests have been damaged (National Geographic Information Institute 2011).

Comparison of social and economic status between North and South Korea

In the aftermath of the Japanese occupation of Korea from 1910 until the end of World War II in 1945, Korea was divided at the 38th parallel and administered by the Soviet Union in the north and the United States in the south. The DPRK in the north and the ROK in the south were established in 1948. After the Korean War (1950-1953), the Korean division has been increasingly intensified.

In the table below are data reflecting the economic and social conditions of the DPRK and the ROK. The data particularly emphasizes the big difference in economic situations between North and South Korea. For instance, the Gross Domestic Product (at official exchange rates) of South Korea is approximately 35 times greater than North Korea's.

Table 3.1: Comparison of social and economic data on the DPRK and the ROK

Item	North Korea (DPRK)	South Korea (ROK)
Land area (km^2)	123,066	100,032
Population	23.079 million (2006)	48.297 million (2006)
Life Expectancy (years)	67 (2008)	80 (2008)
Government Type	*Juche* unitary single party state	Presidential republic

[22] They are also called the four eco-regions of the southern Korean evergreen forests, central Korean deciduous forests, Baekdu (Changbai) Mountain mixed forests and Manchurian mixed forests.

GDP at OER*[1] (US$)	28 billion (2009)	986.3 billion (2010)
GNI per capita[*2] (US$)	1,108 (2006)	18,372 (2006)
Primary Energy Consumption per capita (TOE[*3])	0.78 (2006)	4.79 (2006)
CO^2 Emission (kt)	70,652.9 (2007)	502,909.6 (2007)

[*1] The GDP (Gross Domestic Product) at official exchange rates (OER) is the home-currency-denominated annual GDP figure divided by the bilateral average US exchange rate with that country in that year.

[*2] The GNI (Gross National Income) comprises the total value produced within a country (i.e. its gross domestic product), together with its income received from other countries (notably interest and dividends), and less similar payments made to other countries.

[*3] Tons of Oil Equivalent

(Compiled based on Statistics Korea 2007; National Geographic Information Institute 2011; The World Bank 2011)

3.2. Background of the creation and structure of the Korean DMZ

3.2.1. The Korean DMZ as the inter-Korean border

The Korean War broke out on 25 June, 1950, between the ROK and the DPRK. The war was a result of the physical division of Korea by an agreement of the victorious Allies at the end of World War II. An armistice was signed on 27 July 1953, leaving almost three million Koreans dead or wounded and millions of others homeless and separated from their families. It was signed by the United Nations (UN) Command, which included the United States Army and the two communist allies, DPRK and China; this group of signers came to be known as the Military Armistice Commission. At the time of the discussion on the armistice, the then ROK President Rhee Syngman objected to the armistice and did not join the armistice agreement. As a result, the ROK is not included in the parties of the armistice agreement (So 2007: 97).

Upon the armistice, the **Korean Demilitarized Zone (DMZ)** was established as a military buffer zone between the two Koreas, cutting the Korean Peninsula roughly in half. The **Military Demarcation Line (MDL)** bisects the 4-km wide DMZ, lying very near to the 38th Parallel. The armistice agreement stipulates the purposes and limits of the MDL and the DMZ as the following:

> A military demarcation line shall be fixed and both sides shall withdraw two (2) kilometres from this line so as to establish a demilitarized zone between the opposing forces. A demilitarized zone shall be established as a buffer zone to prevent the occurrence of incidents which might lead to a resumption of hostilities (Article 1, Clause 1 of the Korean War Armistice Agreement).

While the armistice agreement is valid as an international law, it has not been fully implemented.

According to Article 1, Clause 10 of the armistice agreement, the civil administration and relief in the southern part of the Korean DMZ are under the responsibility of the UN Command and the northern part under the responsibility of DPRK and China. In the current de facto situation, the DPRK controls the northern part of the DMZ and the southern part is under the joint control of the UN Command and the ROK (So, 2005: 86).

● Box 3.1: What is a Demilitarized Zone?

A Demilitarized Zone (DMZ) results from a war and means the cease of a war rather than the end of a war (Kim 2006a: 36). It is, according to international agreement or pact, defined as a territory including soil, water and air banned from any armament (So, 2005: 83). In the aspect of international law, the 1949 Geneva Conventions and the 1977 Protocol on International Armed Conflicts provide for the creation of DMZs (Westing 1998: 92). The terms 'military buffer zone' and 'no-man's land' (an area of land between the borders of two countries or between two armies that is not controlled by either) are sometimes used interchangeably.

The Korean Peninsula is not the only place where a DMZ exists or has existed. There have been DMZs between Syria and Israel, between North and South Vietnam (1954–1975), in El Caguán, southern Colombia, against the Revolutionary Armed Forces of Colombia (1999 – 2002), and between Iraq and Kuwait (1991–onwards).

The utmost purpose of DMZ creation is deterrence of war. In some cases, it offers unusual opportunities for biodiversity in the landscapes exempted from inhabitation and development. The Korean DMZ is a very convincing example of this phenomenon. Additionally, the DMZ on the Iraq-Kuwait border established after the 1990 Gulf War, and the UN Buffer Zone (de facto identical to a DMZ) between the Republic of Cyprus (or Greek Cypriot) and the Turkish Republic side of Northern Cyprus (or Turkish Cypriot) are good examples. They attract the interest of the international society on ecosystem protection and signal the opportunities possible by the establishment of trans-boundary peace parks (For more details, see Alsdirawi, Faraj 2004; Grichting 2008).

The MDL extends 248km east to west, dividing the Korean Peninsula into North and South Korea. The MDL ends at the mouth of the Imjin River in the west and at Myeongho-ri in Goseong-gun (Goseong County), of the East Coast in the east (see Map 3.2). The MDL is not marked in the Han River estuary, into which flows the Imjin River, although the same regulations are applied according to the additional agreement on the Han River estuary established on 3 October, 1953. The Korean DMZ does not include the small islands in the West Sea (Yellow Sea) or the marine region. Unlike the DMZ on land in the territorial region, the civilians' uses in the western coastal area around the mouth of the Han River are allowed, as stipulated by Article 1, Clause 5 of the Korean War Armistice Agreement.

The marine MDL is unspecified in the armistice agreement. In August 1953, the UN Command

established the Northern Limit Line (NLL) in the western coastal area, which the ROK has confirmed as a demarcation line. The DPRK has not agreed to it, insisting its own marine MDL. The disagreement on the marine border line has created high military tension between the two Koreas and has even triggered several military battles at sea between the two Korean marines, such as the shelling of Yeonpyeong Island by the DPRK in November 2010.

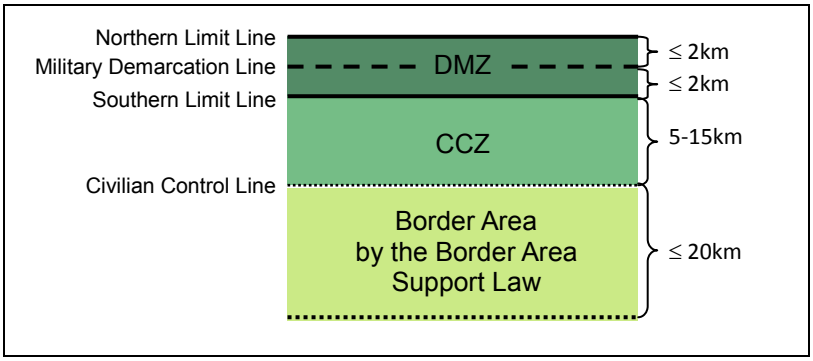
The Korean DMZ was originally 4km-wide with the NLL and the Southern Limit Line (SLL) (see Figure 3.1 and Map 3.2). However, the total area of the DMZ is not 992km^2 (248km x 4km) but closer to 907km^2 (Korea Environment Institute 2003: 19; Shin, Lim 2007: 6; Kim et al. 2009: 9), because the two Koreas moved the NLL and SLL toward the MDL, violating the regulation of the 2-km retreat from the MDL as stated in the armistice agreement. As a result, a large number of military personnel and weapons are located inside the Korean DMZ in reality (Green Korea United 2008: 9; Korea Environment Institute 2003: 19; Korea Research Institute for Human Settlements 2003: 56; Park 2007: 107: 94; Sin et al, 2007: 6).

In sharp contrast with its claimed purpose, the DMZ is actually a quite heavily militarized zone with numerous land mines, armed guard posts, observation posts, artillery positions and fences (Korea Research Institute for Human Settlements 2003: 17-18). It has been guarded by hundreds of thousands of combat-ready troops on both sides. Military operations such as ambushes and searches have been occurring despite the armistice agreement, and there have often been small gunfights as well (Kim 2006a: 22-23; Green Korea United 2008: 9). The practice of mutual slander and psychological operations, such as loudspeaker broadcasts designed to demoralize their opponents, also occasionally occurred over the fence. Such actions were finally suspended by an agreement between the inter-Korean military generals in June 2004 (Hangyore 2004).

3.2.2. Spatial structure of the Korean DMZ Region

In addition to the Korean DMZ, the areas adjacent to the Korean DMZ have also been impacted by military confrontation, and inhabitation and development have been suppressed and controlled in many areas to various extents. The Civilian Control Zone (CCZ) and the Border Area which were designated by the ROK legislation are examples (see Figure 3.1). Many parts of these areas share common features with the DMZ (Korea Environment Institute 2003: 60) in terms of vegetation, watersheds, land forms, history and local culture. Therefore, all three zones should be regarded together as one bioregion, particularly in regard to connectivity conservation. Some relevant literature and policies in ROK take this approach, although the zoning criteria and boundaries are somewhat different depending on research purposes. The present study uses

the term **Korean DMZ Region** to indicate the geographical space in and around the Korean DMZ as one bioregional concept.



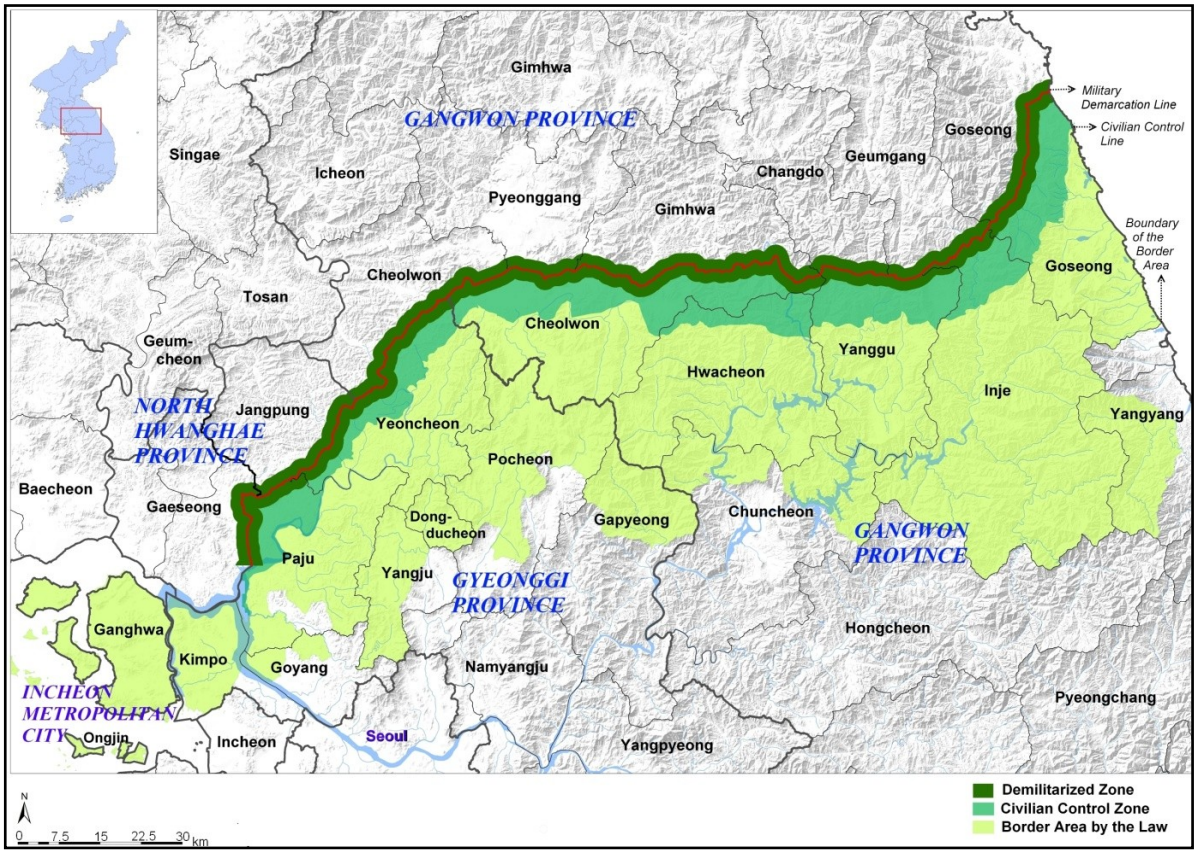


Figure 3.1: Spatial concept of the Korean Demilitarized Zone (DMZ) Region

Map 3.2: Structure of the Korean Demilitarized Zone (DMZ) Region

(Source: Gyeonggi Research Institute; slightly changed and translated by the author)

The **Civilian Control Line (CCL)** is established south from the SLL of the Korean DMZ. It was originally created in February 1954 by the authority of the commander of the US Army and named *Guinongseon* (translation: boundary to return to the farm) in order to prohibit the entrance of civilians and to control their return to farms. Later in 1954 when the ROK Army

took over the responsibility of defending the MDL, the name was changed to the CCL. Since then the farming by commute and residential farming could be partly allowed to the extent that military operations and security were not undermined (Kim 2006a: 24; Hwang 10.02.2000: 35; Park 2007: 95). The area between the SLL and the CCL is called the **Civilian Control Zone (CCZ).** Its legal specifications were provided as a military concept by the Military Installations Protection Act enacted in 1972, which was replaced by the Military Bases and Installations Protection Act on 22 September, 2008.

Based on the act, Protected Zones for Military Bases and Installations have been designated south of the DMZ and they are divided into two sections along the CCL. The section north of the CCL, with some exceptions, is called the Prohibited and Protected Zone (in Korean: Tongjaebohoguyok) and remains under more control with stricter restrictions. The section south of the CCL within 15 km of the MDL is called the Restricted and Protected Zone (in Korean: Jaehanbohoguyok).

Residential and human activities in the CCZ have been highly restricted (e.g. repair of a house). As a result, ecosystems of high importance developed in some parts of the CCZ. The original area of the CCZ was 1,528km^2 (1,048 km^2 in Gangwon Province and 480 km^2 in Gyeonggi Province) when it was created in 1954. Due to the continuous and vigorous claims of local people, the procedure of entrance into the CCZ has been gradually simplified. The regulations for farming facilities have eased since the 1990s based on the revisions of the Military Bases and Installations Protection Act. As a result, the width of the CCZ, or the distance between the SLL and the CCL, was reduced from 5-20km to 5-15km initially in 1997 and 5-10km again in 2007 (Green Korea United 2008; Korea Research Institute for Human Settlements 2003: 10). As some areas were exempt or gradually eased from the regulations under the act, more and more planning and development projects followed, particularly near metropolitan areas.

The **Border Areas,** as prescribed by the Border Area Support Act, are another category included in the areas surrounding the Korean DMZ on the ROK side. The act was enacted in 2000 with the initiative of the national assemblymen of corresponding regions in order to support regional development, which had long been underdeveloped due to restrictions for military operations. The Border Areas were selected from the administrative units within the range of 20km of the CCL according to the five indicators[23]. It covers 98 towns, townships or villages (Korean

[23] The five indicators are: population increase rate for the recent 5 years, road pavement rate, proportion of laborers in manufacturing industry and proportion of the Military Bases and Installations Protected Zones. If a town or a village has more than 3 lower values than the national average values among 5 indicators, it belongs

administrative units: *Eup*, *Myeon*, *Dong*, respectively) in 15 cities or counties, amounting to a total area of 8,097km^2 including some areas of the CCZ (Kim 2006a: 30-31; Park 2007: 108-109).

Information on the areas near the DMZ on the DPRK side is very limited. The official environmental policies of the DPRK do not mention the Korean DMZ, and there seem to be no specific regulations regarding the border areas. It is estimated that such regulations are rather unnecessary, since people generally have no freedom of movement in DPRK (Hwang 10.02.2000: 37) and also because the DMZ means no more than a strategic military location to the DPRK government (Park 2007: 56). In DPRK, it is forbidden for civilians to travel within 20 km of the MDL. In 1991, the DPRK made regulations on foreigner travel, which specify Travel Prohibited Zones and zones where foreigners can travel by car (Korea Research Institute for Human Settlements 2003: 50). The Travel Prohibited Zones are established in 8 sites including the border areas, covering around 40% of the total area of the DPRK (Hwang 2000: 184; Korea Research Institute for Human Settlements 2003: 50; Kim 2006a: 27).

3.2.3. Geographical and ecological features of the Korean DMZ Region

Geographical features

The topography of the Korean DMZ Region shows similar features to the typical topography of the Korean Peninsula, which is characterized as being low and flat in the west and elevated and mountainous in the east. Various landforms include coasts, inland wetlands, mountain areas, plains and river watersheds. The Korean DMZ Region is biogeographically divided into the following four sub-regions from east to west[24] (Shin et al. 2007a: 3; Shin et al. 2007b: VI-3):

- *East Coast region*, which includes lagoons, coastal wetlands and valleys;
- *Mid-eastern mountainous region*, which includes high mountains and highland moors;
- *Mid-western plain region*, which includes inland wetlands and farmlands that are significantly important for the wintering sites of the migratory birds; and
- *West coastal region*, which includes an estuary of the Han River and tidal flats.

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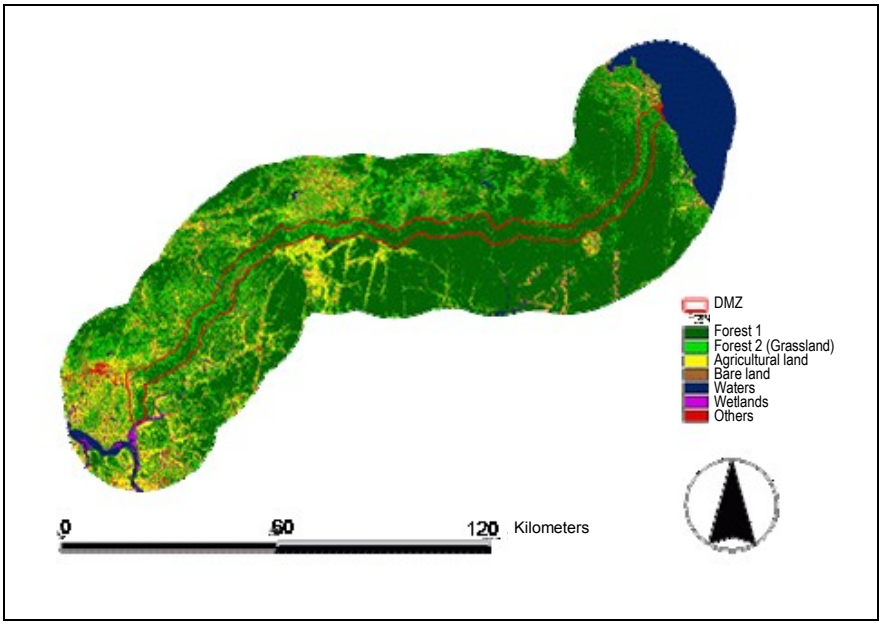
to the Border Areas by the Border Area Support Act (Kang 2006: 380).

[24] Some researchers divide it into the three regions, incorporating the East Coast region and the mid-eastern mountainous region. Although the Baekdudaegan (Baekdu Mountain Range) is located very close to the East Coast, natural environment and ecological characteristics between them are distinct; therefore different conservation strategies should be applied. The present study therefore follows the division of the four regions.

The three main water systems of the Imjin River, the Han River and the East Coast traverse the DMZ and most rivers originate from the north and flow to the south. All rivers remain in their natural forms, as they have not been detracted (Kim et al. 2009: 29).

Recent analysis using Landsat TM satellite images in 2001 divided the land cover of the Korean DMZ into forest (53.8%), agricultural land (7.4%), grassland (17.6%), waters (8.8%), bare land (10.1%), wetlands (1.2%) and others (1.1%) (see Map 3.3) (Shin et al. 2007a: 6; Shin et al. 2007b: IV-6). Although the analyses of other research institutes show somewhat different distribution ratios of land cover types,[25] it is commonly agreed upon that the forest is most dominant, covering more than half of the total area, and grasslands and agricultural land are mostly the next dominant types of land use.



Map 3.3: Land cover map of the Korean Demilitarized Zone (DMZ)
(Source: Shin et al. 2007)

Since the old farmlands in the Korean DMZ have long been abandoned and turned into grasslands, the grassland area inside the DMZ is relatively large compared to areas outside of the DMZ. The areas surrounding rivers consist of wetlands (Shin et al 2007a: 6; Korea Environment Institute 2003: 175-176). Since each land use analysis used different data sources,

[25] Another analysis of the Korea Research Institute for Human Settlements, based on Landsat TM satellite images taken from 1997–1999, gives the distribution of 74.7% forest, 14.1% agricultural land, 9.5% grassland, 0.4% waters, 0.4% bare land and 0.2% wetlands (Kim et al. 2009: 32). The analysis of the Korea Environment Institute using the images of the late 1990s resulted in 80.41% forest, 10.43% grassland, 7.94% agricultural land, 0.35% waters, 0.68% bare land including streets, 0.13% wetland and 0.06% others (Korea Environment Institute 2003: 175).

different analysis methods and somewhat different object areas, the results cannot be used to identify the changes over time. On the other hand, a distinct difference in land use patterns between North and South Korea can be found. Many parts of land adjacent to the northern DMZ on the DPRK side were converted to farmlands or became bare land due to deforestation, while there is no noticeable difference between the inside and outside of the southern DMZ in the ROK (Korea Environment Institute 2003: 177).

The Korean DMZ belongs administratively to the two provinces of Gangwon and Gyeonggi in the ROK and the two provinces of Gangwon and North Hwanghai in DPRK (see Table 3.2). Contrary to the general public's expectations, there are people living in the DMZ who are not military personnel. Two farming villages are located inside the Korean DMZ, each of which was made for propaganda against the other side of the border. The Daesung-dong Free Village is in the south and the Gijung-dong Peace Village is in north. They are both located only within 400 m from the MDL (Kwon 2006: 287). Daesung-dong, belonging to Paju City, is located south of the Panmungeom, where the 1953 Korean Armistice Agreement was signed. About 200 residents live there, farming mostly rice, ginseng and beans (Green Korea United 2008: 68). Before the Korean War, the Korean DMZ was inhabited by many people, many of whom were engaged in farming. There used be 427 villages in total according to an analysis of topographical maps of the 1910s, most of which disappeared during the Korean War and after the creation of the Korean DMZ (Kim et al. 2009: 36).

Table 3.2: Administrative districts of the Korean Demilitarized Zone (DMZ)

DPRK (North Korea)		**ROK (South Korea)**	
North Hwanghae Province	- 1 city: Gaeseong - 1 county: Jangpung	Gyeonggi Province	- 1 city: Paju - 1 county: Yeoncheon
Gangwon Province	- 6 counties: Goseong, Geumgang, Changdo, Gimhwa, Pyeonggang, Cheolwon	Gangwon Province	-5 counties: Goseong, Yanggu, Inje, Cheolwon, Hwacheon

(Compiled based on Korea Environment Institute 2003; Statistics Korea 2007)

The CCZ has more villages and residents[26]. Since 1968, the ROK government has created villages in the CCZ for the purpose of developing unused land and operating psychological

[26] Administratively, one city (Gimpo City in Gyeonggi Province) and one county (Gangwha County in Incheon Metropolitan City) are included in the CCZ, in addition to the same administrative districts of the southern part of the Korean DMZ.

warfare against the DPRK. The number of villages has been decreasing, as the area of the CCZ has been reduced. As of 2008, 10 villages are left in the CCZ (Green Korea United 2008: 68). The number of settlers from other regions including the DPRK is larger than the number of native local people in the villages. As a result, a unique local culture has emerged, absorbing the culture of soldiers deployed in the Korean DMZ Region (Korea Environment Institute 2003: 24). Farming is a major human activity occurring in the CCZ besides military activities.

Ecological features

The ecological significance of the Korean DMZ Region can be summarized in three aspects: the importance of biological diversity, its unique ecological processes and the great potential for sustainable regional development.

First, the significance of biodiversity in the Korean DMZ Region has become a key interest of national and international conservationists. Due to extremely reduced human activity and land use for over a half-century, nature flourished and many species which would not have survived in other places found shelter. It is estimated as the only temperate vegetation zone in the world left with no human intervention (Green Korea United 2008: 106). In addition, its biogeographical feature also plays a role. Several floral regions of the flora biome of the Korean Peninsula cross in the DMZ, and therefore many elements of north and south flora coexist (Korea Forest Research Institute 2000: 68).

Representative ecosystems are identified in the four biogeographically divided sub-regions. From east to west, they are: the East Coast, the Hyangro Peak area, the area of Mt. Daeam and Lake Duta, the Cheolwon Plain, the wetland area in the mouth of the Imjin River and the Han River, and the tidal flat area around the Gangwha Island (Korea Environment Institute 2003: 25-26). Table 3.3 shows the main conservational values of each representative ecosystem (see also Figures 3.2). In regard to the protected areas, 3 Natural Monuments (11,444ha), and 7 Forest Reserves for Genetic Resources (20,819ha), 1 Ecosystem Conservation Area (also Ramsar Wetland Site) (106ha) are designated in the CCZ (Green Korea United 2008).

Table 3.3: Representative ecosystems and main conservation values of the Korean Demilitarized Zone (DMZ) Region

Biogeographical sub-regions	Representative Ecosystems	Main Conservational Values
East Coast region	East Coast	Coastal ecosystem and cultural tourism resources; Restoration of damaged forest ecosystem; Lagoons (e.g. Hwajinpo Island, inhabited by Black Swans (*Cygnus atratus)*)

Mid-eastern mountainous region	Hyangro Peak area; Area of Mt. Daeam and Lake Duta	Mountain ecosystem between Mr. Geumgang and Mt. Sorak along the Baekdu Mountain Range, which are habitats of Long-tailed Gorals (*Naemorhedus caudatus raddeanus*) and Water Deer (*Hydropotes inermis*)
Mid-western plain region	Cheolwon Plain	Cultural landscape in rice fields as habitats of migratory birds such as Red-crowned Cranes (*Grus japonensis*) and White-naped Cranes (*Grus vipio*)
West coastal region	Wetland area in the mouth of the Imjin River and the Han River; Tidal flat area around the Ganghwa Island	Wetlands around the estuary of the Imjin River inhabited by various birds; Tidal flats and islands, which are habitats for the endangered species such as Black-faced Spoonbills (*Platalea minor*) and Spotted Seals (*Phoca vitulina largha*)

(Adapted from Korea Environment Institute 2003; Shin et al. 2007a)

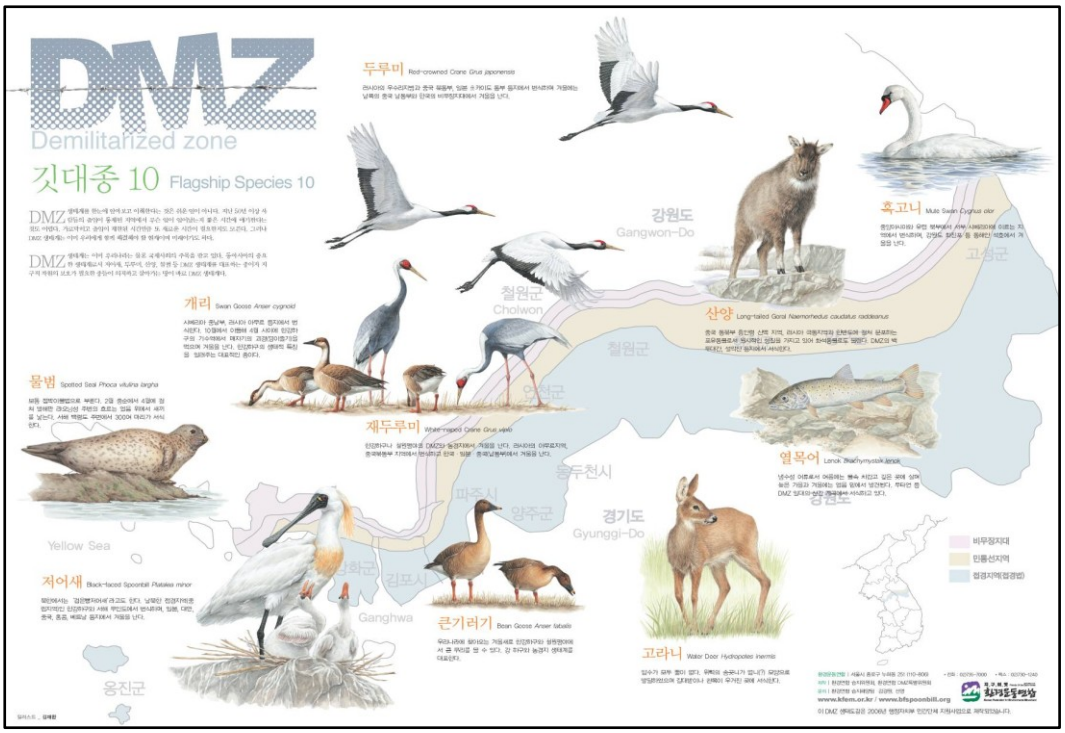
(a) West coastal region of the Korean Demilitarized Zone (© Green Korea United)

(b) Mid-eastern mountainous region of the Korean Demilitarized Zoned (DMZ) (© Choi Byung-Kwan)

Figure 3.2: Biogeographical regions of the Korean Demilitarized Zone (DMZ)

(Source: (a) Green Korean United, 2008; (b) Hangyore 21, 2007)

A field survey inside the Korean DMZ is extremely difficult due to military security as well as the danger of unidentified land mines. Despite the restrictions of the field survey, several surveys were carried out, such as in the wetlands in Jangdan near the Panmunjeom in the west (1996-1999) and the areas surrounding the two railroad lines, the Gyeongui Line and the Donghae Line, which connected North and South Korea in the early 2000s. They were limited in survey areas and methods; more comprehensive information on the landscapes and ecosystems in the Korean DMZ were obtained with some field surveys in the CCZ implemented by several ROK research institutes and the help of satellite images (Ju 2007: 167-168). Among them, two mid-term research projects carried out by the Korea Forest Research Institute from 1995 to 2000 and from 2001 to 2004 provide comprehensive geographical and ecological data, and related literature often bases on these results.



© Korean Federation for Environmental Movement

Figure 3.3: Flagship species of the Korean Demilitarized Zone (DMZ) Region

(Source: Korean Federation for Environmental Movement, 2005)

Most literature on the species of the Korean DMZ is inferred from the survey data of the northern CCZ, presuming that the CCZ is spatially connected to the Korean DMZ (Kim et al. 2009: 31). In its analysis of approximately 70 existing ecological surveys implemented in the Korean DMZ Region since the 1970s, the ROK Ministry of Environment estimated the existence of 2,716 species of flora and fauna, including 67 nationally endangered or protected species[27]. The results show the high biodiversity of the Korean DMZ Region, containing more than half of the species on the Korean Peninsula in a relatively small area (Ministry of Environment of Republic of Korea 2003: 31; Korea Environment Institute 2003: 25; Kim et al. 2009: 31; Ministry of Environment of Republic of Korea, Korea Environment Institute 2007: 9). Among them, Figure 3.3 shows 10 representative and important species[28] of the Korean DMZ Region. It is expected that more species will be identified when comprehensive and detailed

[27] 1,595 plant species (34% of all of the species in ROK), 29 amphibian and reptile species (71% of all of the species in ROK), 201 bird species (51% of all of the species in ROK), and 52 mammal species (52% of all of the species in ROK)

[28] Mute Swan (*Cygnus olor*), Long-tailed Goral (*Naemorhedus caudatus raddeanus*), Lenok (*Bradhymystax lenok*), Water Deer (*Hydropotes inermis*), Red-crowned Crane (*Grus japonensis*), White-naped Crane (*Grus vipio*), Bean Goose (*Anser fabalis*), Swan Goose (*Anser cygnoid*), Black-faced Spoonbill (*Platalea minor*), Spotted Seal (*Phoca vitulina largha*)

field surveys are allowed in future.

In addition to the diversity of species and habitats, the Korean DMZ Region serves as an important ecological network that horizontally connects the diverse habitats of the four bio-geographical sub-regions within it as illustrated in Table 3.3. At the same time, it becomes the vertical ecological corridor connecting Mt. Geumgang (1,638m) in DPRK and Mt. Sorak (1,708m) in ROK. The two mountains are among most important core habitats in the Baekdu Mountain Range (Korea Forest Research Institute 2000: 64), which is linked northward to the regional ecological network in Northeast Asia. The habitats of the Korean DMZ can therefore be core areas of the Northeast Asian ecological network, which extends north through the lower Tumen/Duman River Area to the Sikhote-Alin Mountain Range in the Russian Federation (refer to Figure 3.6). In addition, the stopping and wintering sites of migratory birds (e.g. cranes) in the Korean DMZ are an important part of the East Asia–Australasian flyway, which is one of eight major migratory water bird flyways around the globe (Choi 2005; EAAF Partnership Secretariat 2011).

Second, unique ecological processes that are rarely observed elsewhere have been occurring in the Korean DMZ. The many forests in the Korean DMZ consist of young pines and sprout forests less than 20 years of age because both Korean militaries felled trees and set fire to them regularly to secure better vision of the opposite side. Accordingly, most forests remain at the disclimax state due to the artificial interruption of ecological succession, and this contributes to higher degrees of biodiversity, with increasing grasslands and wetlands originating from forests (Korea Environment Institute 2003: 29; Green Korea United 2008:10).

In addition to forests at the state of artificial disclimax, researchers have observed the long-term rehabilitation process of the used landscape. Old rice fields and settlements were abandoned since the creation of the Korean DMZ and have seen almost no human intervention for a long period of time. They went through a natural recovery process and turned into wetlands (Ministry of Environment of Republic of Korea 2003: 10). A good example of this phenomenon is the area around the mouth of the Imjin River in the west of the Korean DMZ, as seen in Figure 3.2, where many people used to live and cultivate rice. These areas have likewise undergone the natural rehabilitation process (Korea Environment Institute 2003: 30).

Third, the Korean DMZ Region has a great potential to become a model for sustainable regional development or regional development through nature conservation. In addition to well-reserved ecosystems, the Korean DMZ Region produces agricultural products of good quality and carries important and valuable remains of ancient Korean history. After unification, or under a similar

detent system, the abundant remains of the Cold War can be used as monuments of modern history. Some human geographers note the mixture of different social groups in the Korean DMZ Region, such as local natives, soldiers and settlers from North Korea. These groups are developing a unique local culture, which can contribute as a resource of regional development. The tangible and intangible natural, historical and cultural resources can form a basis for promoting sustainable regional development, such as tourism connecting 'eco-culture-peace' (Korea Environment Institute 2003: 37-38).

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Figure 3.4: Wintering Cranes on rice fields of the Cheolwon Plain in the Korean Demilitarized Zone (DMZ) Region

The potential for sustainable regional development has already been explored in some areas. The Cheolwon Plain, situated in the mid-western plain region of the CCZ, is an example. It is well known as an important stopping and wintering site of globally endangered Cranes (see Figure 3.4). The Cheolwon Plain is ideally conditioned for the rest and feeding of the winter migratory birds with large rice fields, abundant water in reservoirs for agricultural use, wetlands and an undisturbed shelter nearby in the Korean DMZ. Abandoned grains that are left after harvest in the rice fields are excellent feed for the bird species such as Red-crowned Crane (*Grus japonensis*), White-naped Crane (*Grus vipio*) and Bean Goose (*Anser fabalis*). Of the migratory birds, Cranes in particular became a symbol of the Cheolwon region, signifying a place of eco-friendly farming and high-quality rice. Rice with the Cheolwon brand is sold at a higher price, and many tourists visit this region to see the traditionally holy birds (Lee 2003: 7-8; Korea Environment Institute 2003: 39).

3.3. Institutional framework, actors and conservation issues

This sub-chapter deals briefly with the institutional frameworks, actors and main conservation issues relating to the Korean DMZ Region. The discussion is geographically limited to the ROK due to the lack of information on the DPRK side, and focuses on the present situation under the national division. It is broadly accepted that the ROK will or should take an initiative in the process of unification or similar system of integration based on its various economic, social and

cultural development paths. Under this presumption, it is highly probable that the institutions of the ROK and the interests of the ROK actors will influence future policies and governance of the Korean DMZ in a future peaceful regime. The following overview contributes to providing information in this regard.

3.3.1. Institutional frameworks

The Korean DMZ has been protected as a result of military confrontation, not by any specific institutions for the purpose of nature conservation. In the international law outlined in the Korean War Armistice Agreement, the jurisdiction of the southern part of the Korean DMZ is under the control of the UN Command and the northern part under the DPRK and China. In 1995, the Military Armistice Commission, together with the Neutral Nations Supervisory Commission established to observe and supervise the operation of the armistice agreement, stopped their actions. Since then, issues regarding the Korean DMZ de facto have been discussed and decided upon through general officer talks between the U.S. and the DPRK or between the DPRK and the ROK (So 2007: 100).

Nevertheless, the ROK government includes the Korean DMZ as a main component in national nature conservation policies. The Ministry of Environment established the conservation measures for the Korean DMZ Region in 2005, which consist mainly of: regular ecological surveys of the southern part of the DMZ, the designation of the DMZ as a UNESCO's Biosphere Reserve in agreement with the DPRK, and the designation of valuable ecosystems in the CCZ and the Border Areas as national protected areas (Ministry of Environment of Republic of Korea 24.08.2005; Ministry of Environment of Republic of Korea 2005). Additionally, the Korean DMZ ecosystem is included in three core elements of the Korean Peninsula Ecological Network system, that is, Baekdu Mountain Range (vertical), the Korean DMZ

Figure 3.5: Illustration of the concept of the Korean Peninsula Ecological Network system
(Source: Ministry of Environment, Korean Environment Institute, 2007)

and its vicinity (horizontal), and coastal regions and small islands (surrounding) (see Figure 3.5) (IUCN 2007: 5; Ministry of Environment of Republic of Korea, Korea Environment Institute 2007: 1). The network concept was amended in 2010 to improve the conservation and rehabilitation of the areas connecting the three major networks and the five main metropolitan ecological regions (Ministry of Environment of Republic of Korea 10.11.2010). However, almost no management measures of the Korean DMZ can actually be implemented under the present system, and very few of the planned measures have been implemented.

The CCZ and the Border Areas, which are under jurisdiction of the ROK, are regulated by the multiple legislations implemented by various national administrations. The representative national acts are: the Military Bases and Installations Protection Act, the Border Area Support Act, the Land Planning and Use Act and the Cultural Properties Protection Act. Local communities have complained about the excessive control and inefficiency due to the duplicated applications of the different acts, all of which are highly binding. Although some of them include very strict regulations regarding land use, most of the regulations are not fundamentally institutionalized for the purpose of nature conservation (e.g. Military Bases and Installations Protection Act; see Section 3.2.2) and do not ensure the protection and management of all of the valuable habitats in the CCZ and the Border Areas.

Few institutional discussions have taken place to prepare for the period after unification or a similar system change. When the two Koreas sign a peace or unification treaty, replacing the armistice agreement, the Korean DMZ will likely be managed by the corresponding regulations of a peace or unification treaty. From then on, the Korean DMZ should be managed by the national laws of the united Korea or similar system. The ROK government established regulations on the management and conservation of the Korean DMZ to come in the era of the unified Korea in the Natural Environment Conservation Act:

> The term ‘natural reservation area’ means an area prescribed by the Presidential Decree from among uninhabited island which is not used for any particular purpose other than military, from among the areas whose ecosystems are spared from damage due to their difficulty of access by people, and also means the Demilitarized Zone for two years from the date when it falls under the jurisdiction of the Republic of Korea (Article 2, Clause 13).

The regulation guarantees the conservation of the Korean DMZ only for the two years following the ROK’s jurisdiction over the DMZ.

Various plans and initiatives on the conservation and regional development of the Korean DMZ Region have been proposed at the national, provincial and local levels. Many of them have remained declarations, lacking realizable possibility mainly due to the existing military

confrontation system. Therefore, the interests on linking conservation and peace-building in the Korean DMZ Region have been increasing during the last two decades. The interests converge towards the introduction of a TBPA in the Korean DMZ Region, based on international conservation schemes such as the Biosphere Reserve, the World Heritage Site, and the Peace Park. Many national and international organizations and conservationists showed much interest in the designation of the Korean DMZ as a TBPA for the protection of important ecosystems in order to provide a platform for facilitating peaceful cooperation between North and South Korea. In fact, the designation of a Biosphere Reserve is officially included in the relevant policies of the ROK Ministry of Environment as described above (Ministry of Environment of Republic of Korea, Korea Environment Institute 2007: 12). Despite many national and international discussions and attempts to designate the Korean DMZ as a TBPA, the DPRK has shown no interest and thus far no practical progress has been made.

3.3.2. Actors

Ideological, military and political confrontation between North and South Korea has existed for more than a half century. The DPRK has never shared the interest on DMZ conservation agenda as proposed by the ROK. In the ROK, several key actors and their relationships affect the decision-making regarding the Korean DMZ Region. Although no specific research on the stakeholders or governance actors of the Korean DMZ Region has been implemented, most of the literature includes central governments, local governments, local communities and NGOs as relevant discussion topics (Kim 2000b; Korea Environment Institute 2003; Ministry of Environment of Republic of Korea, Korea Environment Institute 2007). The characteristics of the key actors in ROK and the relationships between them are briefly described below.

First, within central government, many ministries are involved in the policies on the Korean DMZ Region: Ministry of Environment, Ministry of National Defense, Ministry of Public Administration and Security, Ministry of Land, Transport and Maritime Affairs, Ministry of Culture, Sports and Tourism, Ministry of Strategy and Finance and Ministry of Unification. They have all different interests regarding the Korean DMZ Region; the ministries responsible for finance, development and defense are the most powerful. Discussions and negotiations are usually carried out between the ministries responsible for relevant legal institutions on a case-by-case basis, and no standing framework exists for decision-making on Korean DMZ issues. The interest in the nature conservation of the Korean DMZ Region is, in general, not a priority for most of the ministries aside from the Ministry of Environment. Therefore, despite the efforts of the Ministry of Environment, Korean DMZ conservation has not yet been

included in the agenda of North-South Korean meetings.

Second, the two major provinces located in the DMZ Region - Gyeonggi Province and Gangwon Province - show growing interests in both DMZ conservation and its uses for regional development, but their relevant conditions and position are somewhat different. The Gyeonggi Province has a larger population and is more developed with much plain area in the CCA, resulting in more conflict factors between conservation and development purposes. On the other hand, the Gangwon Province has more valuable ecosystems, such as forests on the Baekdu Mountain Range in the mid-eastern region, and the economic development in the Korean DMZ Region is disadvantageous. Thus, the Gangwon Province focuses more on touristic development, while the Gyeonggi Province has more interest in broader regional development opportunities (Interviewee 23, 2008; Interviewee 25, 2008).

Two provinces have initiated projects and events related to the Korean DMZ Region. For instance, Gangwon Province launched the construction of the DMZ Museum for an exhibit on the Korean DMZ in March 2006 and declared in April 2006 that it would develop its DMZ Region as a popular tourist destination. In addition, since 2006, Inje County in Gangwon Province has constructed the 1.3 million m^2 DMZ Peace and Life Park for the public's education and hands-on experiences of the nature in the Korean DMZ Region (Ministry of Environment of Republic of Korea, Korea Environment Institute 2007: 14; Interviewee 26, 2008). On the other hand, Gyeonggi Province has also announced the plan to create a DMZ Park for Peace and Ecosystem to promote ecotourism (Gyeonggi Research Institute 2008; Interviewee 25, 2008).

The two provincial governments are often less cooperative, indeed rather competitive with each other in order to take a dominant position in the unification process or in other Korean DMZ-related national policies. Some events and initiatives are partly or wholly overlapping and sometimes incompatible. The development of peace cities, the construction of the North-South Korean cooperation complex and the creation of eco-parks are such examples. Additionally, several local governments have fashioned various policies and plans that are sometimes difficult to realize. They want to take on major projects for North-South Korean cooperation and become an administrative or economic centre of the future united Korea (Kim 2000a: 27).

Third, the views on Korean DMZ Region policies are often different between the central, provincial and local governments. Provincial and local governments often complain that the central government excludes them from DPRK-related policies and projects or the central government is conservation-oriented. On the other hand, the central government tends to consider the provincial and local governments as self-centred or development-oriented (Kim

2000b: 25; Interviewee 22, 2008; Interviewee 25, 2008). A statement of an interviewee in the provincial authority shows such a view on the central conservation government from the provincial and local governments:

> The Ministry of Environment thinks that it should take an initiative in the Korean DMZ Region policies and projects, because they are not related with the local governments and the local governments are just development-oriented. However, the Korean DMZ Region is not only about inside the DMZ, it includes the CCA, which is directly connected with the provincial and local governments' responsibilities (Interviewee 25, 2008, translated by the author).

Fourth, local communities have mixed attitudes about the conservation of the Korean DMZ Region. The majority of local communities are generally supportive of the conservation and eco-friendly sustainable regional development. The results of several questionnaires of local people of the CCZ and the Border Areas demonstrate this support. In an opinion poll of approximately 300 local people in the Border Areas in November 2005, 72.9% agreed to conserve the ecologically valuable areas and to restrict unnecessary development (Choi 2006: 214). A 2000 opinion poll showed that, in regard to the future development of the Korean DMZ and the CCZ post-military conflict, around 77% of local people held the opinion supporting environmentally friendly development (Kwon 2006: 304).

A poll conducted in Cheolwon County in October 2002 showed interesting results. Cheolwon County hosts one of the representative ecosystems in the Korean DMZ Region that serves as a wintering site of endangered Cranes (see p. 54). At the same time, the county is a place where the expectation for development after unification is very high. 77.2% and 57% of 84 local people in Cheolwon answered that the protection of migratory birds - particularly, Cranes - contributes to the local economy presently and will continue to do so after unification, respectively. The respondents who answered negatively were mostly farmers from the areas of bird migration (Lee 2003: 71). As shown in the poll results, local people directly affected by conservation policies tend to oppose nature conservation. In fact, severe conflicts happened in Cheolwon between some local people and local environmental NGOs, as well as between local people and the central government that attempted to designate protected areas in Cheolwon. Opponents to the conservation projects consider the protected areas to hamper local development, and expect great benefits from economic development after unification (Kim 2000b: 29).

Lastly, some major national environmental NGOs, such as Green Korea United and Korean Federation for Environmental Movement, and small local NGOs have worked toward

conservation of the Korean DMZ Region. Their activities have focused mainly on campaigns and educational activities for locals and the public on the conservation value of the Korean DMZ Region, criticism of the relevant government policymaking and protests against habitat destructions due to constructions and other development projects. Although the relevant government authorities often include them in the policy processes, it is largely considered for the purpose of information gathering or policy publicizing and seldom for discussions and negotiations on the conflicting opinions. The NGOs focus on political issues and often conflict with the central and local government authorities in environment and other sectors.

Due to the unique situation created by the military security in the Korean DMZ Region, the environmental NGOs generally face restrictions on information collection and field access. However, the long established informal relationship or networks with military divisions or local people sometimes make it possible to carry out the activities that the governments can hardly do, such as a field survey along the Southern Limit Line for by the Green United Korea (Green Korea United 2008). Another power factor of the NGOs for the Korean DMZ Region is that they collaborate closely with many individuals who have large knowledge of the local situation and are much more committed to conservation of various ecological, historical and cultural values of the Korean DMZ Region, such as local journalists and local groups for migratory bird protection.

As described above, the actors are many and range widely in the Korean DMZ Region, while each party has different interests and opinions on the protection and use of the Korean DMZ Region. Therefore, the exchange and sharing of information and opinions are the most significant challenges to the policy-making related to the conservation of the Korean DMZ Region. Based on the need for actor coordination at the national level, the ROK Ministry of Environment established a joint committee on Korean DMZ Region conservation as a consultation mechanism. It consists of members of central government, the two related provinces, civil society groups, institutes, academia and other related parties. The committee meets twice a year to discuss the conservation and use of the Korean DMZ Region (Ministry of Environment of Republic of Korea, Korea Environment Institute 2007: 15). However, the role of the committee is restricted mostly to information exchange; there is a considerable limit for such a government-driven formal mechanism to improve the actor relationships that include factors of conflicts.

3.3.3. Main conservation issues

Despite highly restricted human access and use, several factors have threatened the ecosystems in the Korean DMZ Region, and the resulting ecological degradation has already emerged. The ecological condition of the Korean DMZ Region can worsen in the future post-military confrontation if appropriate policies are not prepared. The present study considers the pressure for economic development and the landscape degradation as big threats to the Korean DMZ Region conservation, taking for example cases of railway and road construction, tourism development, farming, landslides and forest fires.

Although the problems can be addressed at present to a certain extent by the conservation governance system of the ROK, some aspects cannot be currently dealt with because the issues at hand are sometimes beyond the authority of the ROK, and also because the effects of the institutions on policy are often reduced by the external policy environment, i.e. military confrontation and national security. A suitable institutional framework and policies that can best address major conservation issues need to be developed, taking into account the governance situation of the Korean DMZ Region under the future peace system.

Increasing economic development pressure

During the Kim Dae-jung administration (1998-2002), the 'Sunshine Policy' was created to engage and embrace the DPRK, and the North-South Korean relationship markedly improved, including expanded exchanges of people and economic cooperation (Ministry of Unification of Republic of Korea 2005: 14). In this period, the central and local governments began to initiate development plans in the Korean DMZ Region. These plans continued to be pursued under the Roh Moo-hyun administration (2003–2007). With an increased mood for reconciliation in the Korean Peninsula and the deregulation of the CCZ in the period, many plans on the development as well as protection of the Korean DMZ Region were formed. Local governments demonstrated strong desire for economic development as well. The high expectation on future development even brought about real estate speculation in some CCZ areas (Hangyore 21 2007).

Development projects such as traffic systems between North and South Korea may be unavoidable to some extent to promote exchange and cooperation between the two Koreas as well as regional development. By dint of the 'Sunshine Policy,' the old traffic systems connecting North and South Korea were reconstructed for the first time after the national division. The Gyeongui Line between Seoul, ROK and Sinuiju, DPRK in the west of the Korean DMZ (2000-2003) and the Donghae Line between Yangyang, ROK and Anbyun, DPRK (2002-

2003) in the east were re-paved and re-connected (Kim 2006b: 238-239). Besides these two roads, National Road No. 1 also connects North and South Korea in its section of Panmungeom - Joint Security Area inside the Korean DMZ. However, they have been used only in special occasions of cooperative activities between the two Koreas (e.g. commuting of South Korean workers to the Gaeseong Industrial Complex, meetings of separated families and tours of Mt. Geumgang).

The construction of railroads and roads of the Gyeongui Line made negative impacts on the environment in and around the sites both directly and indirectly. Supported by the justification that their purpose was for the improvement of the North-South Korean relationship, the construction of the two railways was performed very quickly, giving very limited or no time for environmental impact assessment or measures to reduce ecological destruction. The roads cutting off the CCZ between the checkpoints on the CCL and the fences of the Korean DMZ are much more numerous, numbering 19 as of 2008, and are also problematic. They were often built without due consideration of concerned habitats and resulted in habitat fragmentation (Green Korea United 2008: 80). More road constructions in the Korean DMZ Region are expected if the relationship between the two Koreas is in progress and the demand of regional development increases.

Another example is related to tourism development. The unique cultural and natural resources of the Korean DMZ Region led the central, provincial and local governments of the ROK to develop plans for tour projects. The tour programmes of visiting Panmungeom and underground tunnels in the Korean DMZ have since been in operation under the name of *Anbo-Gwangwang* (translation: security tourism). Some environmental NGOs and local people are engaged in developing ecotour activities, such as bird-watching in Cheolwon Plain. However, most of the government-initiated tour project plans centre on the construction of tour facilities and complexes, which has already caused, and may cause in the future, negative ecological impacts. Environmental NGOs therefore criticize the fact that local governments speak about nature conservation and management on the one hand, but they promote tourism development without any environmental consideration on the other hand (Green Korea United 2008: 96). An example is a large-scale tour facility named the North-South Korean Exchange Town. Constructed in the middle of the CCZ in Goseong County in the east (2006-2008), it had placed heavy environmental pressure on habitats in the area in addition to the existing facilities already in place such as a road, a railway and the Office of Customs, Immigration and Quarantine (Green Korea United 2008: 95).

Another critical point is that most of the implemented or planned development projects in the

Korean DMZ Region often overlap or are not harmonious each other. The ineffective policy outcomes are aggravated by very limited data and information regarding the natural, cultural and historical resources in the Korean DMZ Region and the absence or inefficient operation of the systems coordinating relevant central, provincial and local governments as well as other actors such as NGOs.

Landscape degradation

Most farming activity takes place in the low valleys and plains in Paju, Yunchun and Cheolwon in the west and middle of the CCZ. There are two types of farming: farming by commute and farming by residence. Some farmers who commute have expanded their farmlands excessively and sometimes illegally by converting wetlands and forests into rice fields or ginseng fields (Korea Environment Institute 2003: 35; Green Korea United 2008: 85). The converted farmlands lead to ecological problems such as habitat destruction, pesticide pollution, introduction of invasive species, negative impacts from the construction of reservoirs for farming and farm roads and noise from farm machines (Kim 2006b: 249). No strict monitoring system exists against illegal farming. Besides, once crops have been planted, there is no measure to control them until harvest (Green Korea United 2008: 85).

Landslides and forest fires pose a big threat to the forests in the Korean DMZ Region. These are caused by military facilities and operations. According to a field survey carried out in the CCZ by the Green Korea United in 2006–2007, extensive landslides were observed around military operation roads created over steep hills, particularly in the mountainous Gangwon Province. Landslides not only directly destroy forest habitats but may also degrade the downstream of nearby rivers due to soil erosion. Many of the roads were built by the military without proper consideration of the physical features of the forest land and the environmental impacts of road construction. Due to the difficulty of access to the roads, the recovery of such ecological damage is extremely hard (Green Korea United 2008: 82-83).

Forest fires are a very important environmental factor that affects the unique ecological system of the Korean DMZ. On one hand, the fires, which are set to remove obstacles obstructing the field of vision, have long played a critical role in controlling ecological succession. On the other hand, it is also obvious that they are a threat to forest ecosystems including wild animals, and they are always laden with the possibility of developing into massive wildfires and sweeping into surrounding civilian areas. Climate change may increase the possibility of occurrence of forest fires (Kim 2006b: 251; Green Korea United 2008: 93).

3.4. Comparison of the former inter-German border and the Korean DMZ

This sub-chapter compares the social, political and natural characteristics of the former inter-German border and the Korean DMZ. A comparative approach allows for a clearer understanding of the concerned objects by identifying their similarities and differences. Comparison is also useful when we seek to provide implications for one case from an analysis to another because it contributes to setting the boundaries and limits for the application of such implications. While the two cases of Germany and Korea share similarities, there also exist different conditions and contexts which need to be taken into consideration. As a whole, the Korean DMZ has more extreme border feature than the former inter-German one.

Border creation and border situation

The spatial structures of the former inter-German border and the Korean DMZ are compared in Table 3.4. The German border structure is explained in more detail in Section 5.1.1.

Table 3.4: Comparison of structures of the former inter-German border and the Korean DMZ

	Former inter-German Border (Until 1989)		**Korean Demilitarized Zone**	
	West	**East**	**South**	**North**
Purpose of creation	-	Prevention of people's escape to West Germany	Military buffer zone according to the armistice of the Korean War (1950-1953)	
Length (km)	1,393		248	
Width (km)	-	0.1~2*[1] (Average: 0.5)	≥2	≥2
Area (km^2)	-	176.56*[2] (0.05% of the unified Germany)	907.3 (0.41% of the Korean Peninsula)	
Jurisdiction	-	East Germany	UN Command	DPRK, China
Transborder traffic	10 roads (incl. 4 highways), 8 railways, 2 canals, 3 airways		3 roads, 2 railways	

*[1] It indicates the width of the 'protection strips (Schutzstreifen),' which are the area between the borderline and the fences (or concrete walls in case of Berlin). The German GB corresponds to its part between the borderline and the surveillance tracks with the width of 50 to 200m (see Section 4.1.1).

*[2] The area of the German GB

Both borders were created arbitrarily by world powers as an outcome of the Cold War. As such, they are not international borders in the customary sense because they do not divide peoples who are distinguished by language, culture and history (Hwang 10.02.2000: 43). However, the

Korean DMZ was created as a result of the three-year civil war between the two Koreas, whereas no war occurred between East and West Germany. The military installations on the former inter-German border were not necessarily established for national defense against a war. They were rather intended to prevent and block the continuously increasing escapes of East Germans to West Germany (Hwang 10.02.2000: 39).

In regard to the regional development of the border areas, both West Germany and South Korea established policies to support the regional development of the border areas. In 2000, the ROK government enacted the Border Area Support Act to support the regional development of underdeveloped border areas (see Section 3.2.2). Regional development in the Korean DMZ Region depends much on the inter-Korean relationship. The western area of the Korean DMZ Region has greater potential, because it is largely flat and located between the metropolitan areas of Seoul in ROK and Gaeseong and Pyongyang in DPRK.

West Germany also had a similar regional development policy of the Zonal Border Area (Zonenrandgebiet), established in 1965 following pressure from a working party made up of local authorities and local chambers of commerce from the former inter-German border areas. It applied to the former inter-German border areas as well as the zones bordering the Baltic Sea and former Czechoslovakia, with an average width of 40km covering roughly 20% of the area of West Germany. Up until German reunification, the Zonal Border Areas enjoyed advantageous policies for tax incentives, capital grants and infrastructural developments (Smith 1994: 233).

It is noteworthy that, in comparison to the Border Area Support Act of the ROK, the aim and role of the German Zonal Border Area was not only to support the area's regional economic development but also to contribute to efforts for reunification and peace (Kim 2006a: 34). Although the principle of 'compensation for disadvantages (Nachteilsausgleich),' was one of the major justifications for the policy, it was also based on the constitutional imperative for reunification. To let the border area become a backward peripheral area could have meant to accept the border as a final political boundary (Smith 1994: 236).

After German reunification, the former inter-German border became the border between German Länder. The pressure for development was not largely increased by the changed situation of the border. Instead, the former border areas have been under the *Aufbau Ost* (agenda for economic recovery in eastern Germany) policy, which is applied to all of eastern Germany. In contrast, in the event of a peaceful regime, the Korean DMZ Region is expected to be under high pressure for regional development due to its geographical position and the local people's high expectations.

Significance of nature conservation of the Border Area

Although the background and severity of the national division of Germany and Korea are somewhat different, the long-lasting confrontations across the border in both cases created large ecosystems remaining almost undisturbed: the German GB and the Korean DMZ ecosystem. Both contain many valuable habitats and rare species hardly found elsewhere and function as large-scale ecological networks connecting important habitats. With increasing habitat fragmentation nationwide, their roles as ecological networks are becoming more important in the federal (or national) biodiversity strategies both in Germany and ROK. Moreover, their role and significance as ecological networks extend to the international scale. The German GB is connected with the European GB along the entire former Iron Curtain (see Section 5.2.2), and the habitats of the Korean DMZ can also be core areas of the regional ecological network in Northeast Asia.

The two large ecological networks along the border areas in Germany and Korea could continue to be well protected for the ironic reason that the areas were the very places of severe confrontation between the two sides across the border. The severe confrontation on the border resulted in areas off-limits to humans for long periods of time. In addition, landmines, which are in general dangerous to wildlife, also contributed to the protection of the nature of the two border areas by obstructing human entrance and regional development. Another paradoxical factor which may normally be destructive to the nature, is the presence of some military activities in the border areas, such as fire setting and tree felling in the Korean DMZ (see Section 3.2.3). Likewise, in the former inter-German border area, the border guards of the GDR mowed grass, cut trees, or sprayed pesticides in order to secure a view to the other side. These actions helped provide shelters for rare animals and plants that required open landscapes (Becker 2004: 23; Ullrich 2006: 201; Interviewee 2, 2008).

In other words, the German GB and the Korean DMZ are not just well-reserved natural areas; they are also the results of the interesting interactions between natural processes and human historical events. Thus, it can be inferred that the conservation and management of the two border area ecosystems are closely related to historical, social and cultural factors.

Relations between the divided in Germany and Korea

During the German division, it was possible, despite some restrictions, for East and West Germans to generally maintain contact and have exchanges by methods such as post and physical travel. Transportation systems by land and air (see Table 3.4) were in use and uninterrupted despite the strong border fortifications (Hwang 10.02.2000: 40). Although East

Germans needed special permits from the government to travel, West Germans could proceed to the border freely with no special authorization or passes for border crossing. The former inter-German border was more or less passable at the beginning of the division, but became increasingly closed (see Section 4.1.2). Berlin, which was also divided into East Berlin and West Berlin, was a special place where passage across the border was much easier, and played a crucial role in maintaining mutual exchange. Moreover, many East Germans could watch TV programmes of West Germany and became familiar to standards and realities of life on the other side, which facilitated the process of social integration after reunification.

On the contrary, civilian exchanges between North and South Korea have been extremely restricted. Many families separated during the Korean War still do not even know where their family members live or whether they are still alive on the other side, let alone enjoy access to visits, letters, TV and radio. To the separated families, the Korean DMZ is a symbol of the tragic national division which should be removed as soon as possible by way of unification. In the early 2000's, with the reconnection of the roads between North and South Korea and the inception of economic cooperation in the Gaeseong Industrial Complex in DPRK, South Koreans began to visit North Korea somewhat more easily for business or sightseeing to Mt. Geumgang. However, similarly to the situation of the former East Germans, the other side is still tightly closed.

Economic exchange between East and West Germany continued after the foundation of the Federal Republic of Germany (FRG: West Germany) and the German Democratic Republic (GDR: East Germany) in 1949. During the détente period of the *Ostpolitik* (the Willy Brandt cabinet's new Eastern policy) beginning in 1969, the mutual economic trade was an effective means to make them closer. The FRG was the second major trading country to the GDR, and its trade occupied about 12% of the GDR's total trade. In addition, owing to loans from the FRG, the GDR could escape a financial crisis arising from considerable national debt in early 1980s. The FRG offered the loans with very favourable conditions in 1983 and 1984, requesting the removal of the splinter mines on the inter-German border. The fatal weapons on the border were cleared up as a return to the loans (Lebegern 2002: 53). The inter-German cooperation was expanded to other various sectors, such as traffic infrastructure, environmental protection, water management, energy supply, disaster prevention and resource uses. These mutual exchanges and cooperation contributed to mitigating the perpetuation of the German division.

In case of the Korean Peninsula, North-South Korean cooperation began after the historic inter-Korean summit on 15 June, 2000, initiated by the 'Sunshine Policy.' Economic cooperation proceeded in the form of four major projects: (i) the reconstruction of broken railways and roads

(Gyeongui Line and Donghae Line), (ii) the creation of the Gaeseoung Industrial Complex, (iii) the tour project to Mt. Geumgang and (iv) the flood prevention project of the Imjin River including a survey of the Imnam Dam (Park 2007: 115). Cooperation extended further to other economic fields (e.g. agriculture, fishery) as well as other sectors such as culture and humanitarian aid (e.g. meetings of separated families, food aid and loan to North Korea). However, since North-South Korean relations worsened sharply in the late 2000s, some ongoing or planned joint projects, including the tours to Mt. Geumgang, a representative North-South exchange project, have been interrupted or cancelled.

In regards to the conservation of intra-national border areas, the conservation of the Korean DMZ Region is one of the key nature conservation policies of the ROK government. The ROK government has proposed cooperative projects for the Korean DMZ conservation such as a joint ecological survey to the available sites and the Biosphere Reserve designation. The DPRK has shown no interest in non-military issues regarding the Korean DMZ including the nature conservation. Some national and local NGOs and academic institutes have also carried out relevant activities for Korean DMZ region conservation such as ecological surveys and campaigns. On the other hand, during the period of national division, neither the FRG nor the GDR governments had interest in or took initiative to conserve nature in the border areas. There were only a few activities by NGOs on habitat survey in the border areas, which is explained in the following chapter.

4. Historical and geo-ecological overview of the German Green Belt

Before developing the examination of the institutional frameworks and actors of the German GB, this chapter introduces its historical background and geo-ecological features. The historical background and geo-ecological features are important aspects for understanding the German GB as a socio-ecological system and also provide a framework for the examination of the institutional framework and actors, which will continue in the next chapters.

The German GB indicates a long strip of an ecological network that spans nationwide, located along the former inter-German border. It could have not come into existence without the division of the nation. The former political and military border was changed into a valuable ecosystem during the severe confrontation between East and West Germany. The German GB is identified not only as the natural area consisting of the longest ecological network in Germany but also as a site of the historical monument of modern German history during the Cold War.

4.1. Historical background of the German Green Belt

The former inter-German border was the 1,393km-long frontier between the GDR (East Germany) and the FRG (West Germany). It did not include the Berlin Wall, which had a similar character but was not connected with the other inter-German border. It divided not only the two German nations but also the different ideological, political, military, economic and social systems. For about 30 years, it divided landscapes, cities and villages; cut traffic routes; and separated families, relatives and friends.

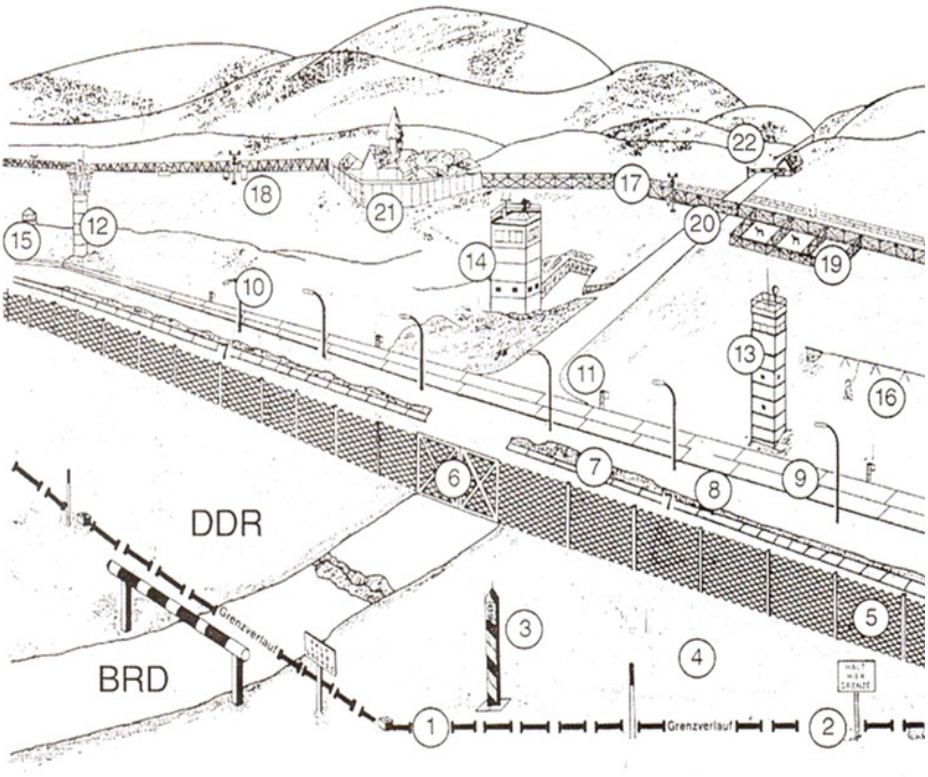
To the FRG side, the inter-German border was a territorial border, or 'green border (Grüne Grenze),' which indicates a border on open meadows, forests or mountains not secured or guarded against crossing. West Germans could go to the borderline without special permits or passes. On the contrary, the GDR government built a large insuperable barricade, the so-called 'national border to the west (Staatsgrenze West).' In reality, it was built at the expense of much human and material resources to prevent the escape of its own people, although the Socialist Unity Party (Sozialistische Einheitspartei Deutschlands: SED), the governing party of the GDR, argued that it was for the anti-Fascist protective barrier or peace-keeping (Lebegern 2002: 6). It functioned more for political purposes rather than military need.

4.1.1. Spatial structure of the former inter-German border

Figure 4.1 depicts the most typical structural features of the former inter-German border installations as found at the site of the border with its opening to public access in 1989. To some extent, the border's structures differed depending on the topography and settlement locations of the regions. The whole area belonged to the territory of the GDR. In the prohibited areas, most trees were felled and grass was mowed every three or four weeks (Becker 2004: 22-23).

The main elements of the border installations are as follows (Lebegern 2002: 40; Becker 2004: 22-23):

- Prohibited zone (Sperrzone): The approximately 5km wide area between the borderline (1) and the checkpoint (or concrete wall) (22) was designated as a prohibited area. Only local residents and those who had passes could enter.
- Protection strip (Schutzstreifen): This indicates the area between the borderline (1) and the barricading fences (17) or concrete barricading walls (21). The width varied from 100m to 2,000m by topographic state. Only local residents and those who had the order or permission of the border troops could enter. Watchtowers (12, 13), concrete bunkers (15) and dog patrol facilities (16) were located inside the area.
- Surveillance track (Kolonnenweg) (9): This was composed of smooth or perforated concrete panels lying in two parallel lines. It was made to allow for the high mobility of the vehicles under border control.
- Control strip (Kontrollstreifen) (8): It was for securing evidence of border trespassing, such as footprints, located directly along the surveillance track. It was harrowed about 6 m wide and treated chemically against weeds, and checked daily.
- Vehicle-barricading ditches (Kfz-Sperrgraben) (7): The ditches were approximately 3m wide and 1.5m deep and embedded with sloping concrete waffle panels westward. The panels' direction proves that the border was installed against refugees from the GDR.
- Border stones (Grenzsteine) and border posts (Grenzsäulen) (1), (3): They marked the borderline. They were painted in diagonal lines in black, red and gold with the emblem of the GDR on top.



1 Borderline with border stones	13 Watchtower BT-11 (rectangular building, 2x2m)
2 Border sign "National Border"	14 Command post
3 GDR border post with national emblem	15 Surveillance bunker
4 'Front' territory of the GDR	16 Dog patrol facilities
5 Border fence 1 (metal fenced)	17 Border signaling and barricading fences II
6 Gate	18 Electricity supply and switchgear for border signaling- and barricading-fences II
7 Vehicle-barricading ditches	19 Off-leash dog place
8 Control strips	20 Gate of signaling fences
9 Surveillance track	21 Concrete barricading walls
10 Aligned lights	22 Checkpoint of an access road to the border area
11 Call box	
12 Watchtower BT-11 (round building, 1m in diameter)	

Figure 4.1: Structure unit of the inter-German border installations

(Adapted from Lebegern 2002, translated by the author)

Additionally, the landmines on the border also posed a big threat to the ones who tried to enter the border. The military engineers of border troops and the National People's Army (Nationale Volksarmee) laid more than one million different types of mines (e.g. spring mines, splitter mines) along a maximum approximate length of 800 km between 1961 and 1983 (Lebegern 2002: 37).

The German GB corresponds to the area between the surveillance track (9) and the borderline. After the German reunification, most of the installations were removed. However, many of the surveillance tracks and some watchtowers remained and have become the most recognizable relics of the former inter-German border, directing visitors to the site of the German GB. In

particular, the two concrete panels with holes on the surveillance tracks are the most conspicuous marks of the former border, which is otherwise difficult to identify. Vehicle-barricading ditches and border stones or posts, some of which are abandoned, can also be found (see Figure 4.2). They are not only historical monuments but also important elements for the potential nature-history-culture tourism of the German GB.

(a) Border post in Vogtland, Saxony (© H. Naderer)

(b) Surveillance track in Salzwedel, Saxony-Anhalt (Photo taken by the author, 24.10.2008)

(c) Border sign in Vogtland, Saxony (Photo taken by the author, 11.08.2008)

(d) Vehicle-barricading ditch in Vogtland, Saxony (© H. Naderer)

Figure 4.2: Examples of remaining border installations in the German Green Belt

About 359,000 residents lived in 840 villages in the entire border area until 1972, who accounted for 2.1% of the population of the GDR at the time. In 1972, the border area of the GDR was reduced according to the new border regulation, and residential areas were hived off from the protected zones and protection strips so as to bring the prohibited area closer to the borderline. After the border change, there remained 512 villages and parts of villages home to

approximately 208,000 people (Bode 1995: 25).

4.1.2. From the inter-German border to the German Green Belt

The history of the German division involves complex and multilayered themes, such as border security and control institutions, border crossing areas, illegal border crossing and escape, forced evacuation from the GDR border areas, economic and traffic-related effects of the demarcation, daily life affected by the border, and their impacts up to the present (Lebegern 2002: 6). Effects of the national division were not limited to the human domain; they also severely impacted the direct consequences to the nature of the border area spatially and ecologically.

Changes of the former inter-German border

Table 4.1 below briefly shows changes in the former inter-German border's character during the period of German division. The border situation became tenser with more and more armament on the border space, impacting both people's lives and the natural environment in border areas.

Table 4.1: Changes of the former inter-German border character by time period

Period	Characterof the inter-German border	Significant incidents
1945-1952	• Change from an open demarcation line to a national border • No barrier for border crossing	• Blockade on West Berlin by the USSR (June 1948 – May 1949) • Foundation of the FRG (May 1949) and the GDR (October 1949)
1952–1961	• Beginning of the construction of border barricades • Impassable border	• Entry into the NATO of the FRG in 1955 and the Warsaw Pact of the GDR in 1956
1961–1970	• More strengthened border guard and armament	• Beginning of the construction of the Berlin Wall (13 August 1961)
1970–1989	• Further construction of border installations	• Signing of the Treaty on the Basis of Relations between the two German states in 1972 by dint of the new Eastern policy (Ostpolitik) of the FRG
1989–1990	• End of the inter-German border • Beginning of the teardown of border barricades	• Fall of the Berlin Wall (9 November 1989) • Reunification of Germany (3 October 1990)

(Edited and adapted from Becker, 2004; BUND, 2002; Lebegern, 2002)

In the period immediately after World War II, the border was permeable and had no fences - 'green border' -, but it changed into the best secured and most impermeable border in the world. Barricades were first constructed by the GDR in 1952 and became heavily fortified especially

from 1961,when the Berlin Wall was constructed to prohibit the massive escape of East Germans to the FRG (Becker 2004: 23-29; Lebegern 2002: 17-49). It was a 'death zone' for anyone who tried to cross the border without valid permits.

Large-scale evacuations happened in the border area. During the two large evacuation actions in 1952 and 1961, more than 12,000 local residents were evacuated (Lebegern 2002: 26). Their houses, and in some cases, whole villages were tore down if they hindered the construction of border installations. The cross-over across the control strips were forbidden in both directions (Lebegern 2002: 24; Becker 2004: 24). As for the transportation between the FRG and the GDR, only 6 railways and 5 highways/motorways remained open.

With the introduction of far-reaching reforms by Michail Gorbatschow, the General Secretary of the Soviet Communist Party, '*Perestroika*,' the ideological bonds between the Soviet Union and other counties of Eastern bloc became loose. In May 1989 Hungary opened its border with Austria, and some 15,000 people from the GDR reached the FRG via Hungary and Austria (German Federal Press and Information Bureau 2000: 130-131; Molden 2009: 14). On the evening of 9 November 1989, an announcement of the GDR on the easing of the travel restrictions prompted the border crossing in Berlin, letting thousands from East Berlin walk through the checkpoints to West Berlin with indescribable joy. It was the fall of the Berlin Wall. On the weekend of 11-12 November 1989, the inter-German border ended along with the disappearance of protection strips and prohibited zones as well as the abolishment of the firing order on the border (Becker 2004: 29).

The German reunification[29] was completed on 3 October 1990 with the signing of the Unification Treaty (Einigungsvertrag), which officially signified the GDR's accession to the FRG. Meanwhile, on the former inter-German border, 348km of the border strips were still under the threat of mines, despite the GDR's removal of mines along the border from 1983 to 1985. A total of 1,104 mines were found by the mine search order, and in December 1995 the public received official confirmation that the former inter-German border was free of mines

[29] There have been some debates regarding the terms *Wiedervereinigung* (reunification) and *Vereinigung* (unification). Ones who prefer the term *Wiedervereiningung* consider the foundation of the German empire with Wilhelm as Emperor in 1871 as the initial unification of Germany, while the proponents of the term *Vereininung* argue that the term *Wiedervereinigung* would give an impression of German imperialism (Smith 1994: 231). To avoid such semantic and political difficulty, the term *Deutsche Einheit* (translation: German unity) is often officially used in German (for instance, *Tag der Deutschen Einheit* (Day of Germany Unity) on 3 October). The present study uses the term reunification, since it is more commonly used in the relevant academic discussions and literature in English. In case of Korea, the term unification is commonly and officially used.

(Lebegern 2002: 68-69; Becker 2004: 31).

Discovery of the natural value of the former inter-German border area

Before reunification, a few nature conservationists and organizations on the western side of the border noted that extraordinary nature developed in the former inter-German border area, although their survey activities were somewhat limited both spatially (mostly focused on the Bavarian side) and ecologically (mostly concerned with bird habitats) and remained in low profile. The first such ornithological survey on the border was carried out in 1975 in Steinachtal on the Bayern side, and identified that the area's bird habitat structures were very valuable. Subsequently, the Bund Naturschutz (BN) in Bayern, the oldest and largest environmental organization in Bavaria, carried out bird mappings between 1979 and 1984 in Coburg, Bavaria, and concluded that more than 90% of a number of rare and endangered bird species bred in a small part of the border area (Frobel et al. 2009: 399).

The very interesting survey results led to the endeavour for border area protection on the Bavarian side through media outlets, petitions to the inter-German border commission, as well as land purchase for the purpose of conservation by NGOs since 1982. Similar protection efforts arose also in other western parts of the border area, such as in the Schaalesee Lake area by WWF, and in the border area between Hesse and Thuringia by NABU (Naturschutzverbund Deutschland) (Frobel et al. 2009: 399). The activities of NGOs were introduced in a TV film entitled Animals in the Shade of the Border (Tiere im Schatten der Grenze) in 1988 by Heinz Sielmann, a founder of the Heinz Seilmann Foundation. The film showed the high protection value of the nature in the inter-German border area and suggested the vision to create a national park there (Frobel et al. 2009: 400; Heinz Sielmann Stiftung 2011).

With reunification and the disappearance of the inhuman border, the space of the 'death zone' was given back to the people of reunited Germany as a 'lifeline' (Pfennig 2000: 55; BUND 2002a: 3). The flourishing nature of the former inter-German border area was one of the fruitful outcomes of German reunification.

4.2. The German Green Belt as an ecological network

4.2.1. Geographical features

The German GB runs from the Baltic Sea at the northern end to the Vogtland at the Saxon-Bavarian-Czech border at the eastern end along the western state borders of the five New Länder: Mecklenburg-Western Pomerania, Brandenburg, Saxony-Anhalt, Thuringia and Saxony.

To the west, the four Old Länder are adjacent to the German GB (see Map 4.1). It corresponds specifically to the area between the surveillance track and the borderline of the former inter-German border (see Section 4.1.1). It passes along the Elbe River and through the Harz, Rhön and Thuringia Schiefer Mountains (BN/BUND 2002: 7).

Map 4.1: Route of the German Green Belt on the German topographical map
(Author's own illustration)

Along the whole length of the German GB of 1,393km (55% of the total length), the State of

Thuringia contains the longest section measuring 763km, and the State of Brandenburg contains the shortest section of 30km (See Table 4.1).

Table 4.2: Length and area of the German Green Belt contained by the Länder

Länder where the Green Belt is located (Former East Germany)	**Length** (km)	**Area** (ha)	**Bordering Länder** (Former West Germany)
Mecklenburg-Western Pomerania	173	4,425	Schleswig-Hostein (137km) Lower Saxony (36km)
Lower Saxony (Amt Neuhaus)*	43	2,328	
Brandenburg	30	1,206	Lower Saxony
Saxony-Anhalt	343	2,669	Lower Saxony
Thuringia	763	6,741	Lower Saxony (112km) Hesse (270km) Bavaria (381km)
Saxony	41	287	Bavaria
Total	1,393	17,656	

* Amt Neuhaus and seven other independent municipalities (Gemeinde) along the Elbe River of the State of Mecklenburg-Western Pomerania have belonged to the State of Lower Saxony since 30 June 2003.

(Compiled based on BN/BUND 2002; BUND 2002a)

The width of the German GB differs from 50 to 200m along its course, and its total area is estimated to be 17,656ha. While it is rather narrow in terms of nature conservation, it runs through the whole nation and connects diverse and representative habitat types and important ecosystems in and around it. Passing through 17 distinct physiographic regions, it crosses over almost every type of German landscape from coast to lowland and low mountain regions.

Table 4.3: Basic geographical facts of the German Green Belt

Item	**Value**	**Remarks**
Length	1,393km	
Width	50-200m	Average width: 127 m
Area of the German GB	17,656ha	About 0.05% of the area of Germany
Area including adjacent protected areas	223,211ha	About 0.63% of the area of Germany
Concerned administrative entities	9 federal states (Länder) 38 counties (Kreise)* 2 independent towns (Kreisfreie Städte)	5 New and 4 Old Länder Lübeck, Eisenach

* The *Kreis* (in plural, *Kreise*) isan intermediate level of administration in Germany between the Länder and the municipalities (Gemeinden).

(Compiled based on BN/BUND 2002; BUND 2002a)

The boundary of the German GB, however, also faced criticism. According to monument protectionists such as Ullrich (2006), the boundary of the German GB was reduced only to the empty open space of the border installations between the surveillance track and the borderline of the former inter-German border after the removal of the border installations including land mines. The German GB could also have included the vegetative traces along with material relics in the whole border area (Ullrich 2006: 205). The relatively narrow width is also disadvantageous for the purpose of nature conservation. The author estimates that the clear, visible concrete panels of the surveillance track were convenient for identifying the boundary of the long German GB without any applicable conservation framework at the time of the GB creation. However, the restriction of the reduced or narrow boundary can be overcome, and does not pose a serious problem, if the connected habitats and historical resources outside of the defined boundary are embraced in the relevant projects and policies in practice. Most of the discussions and policies of the German GB are carried out in such bioregional perspectives.

4.2.2. Ecological significance

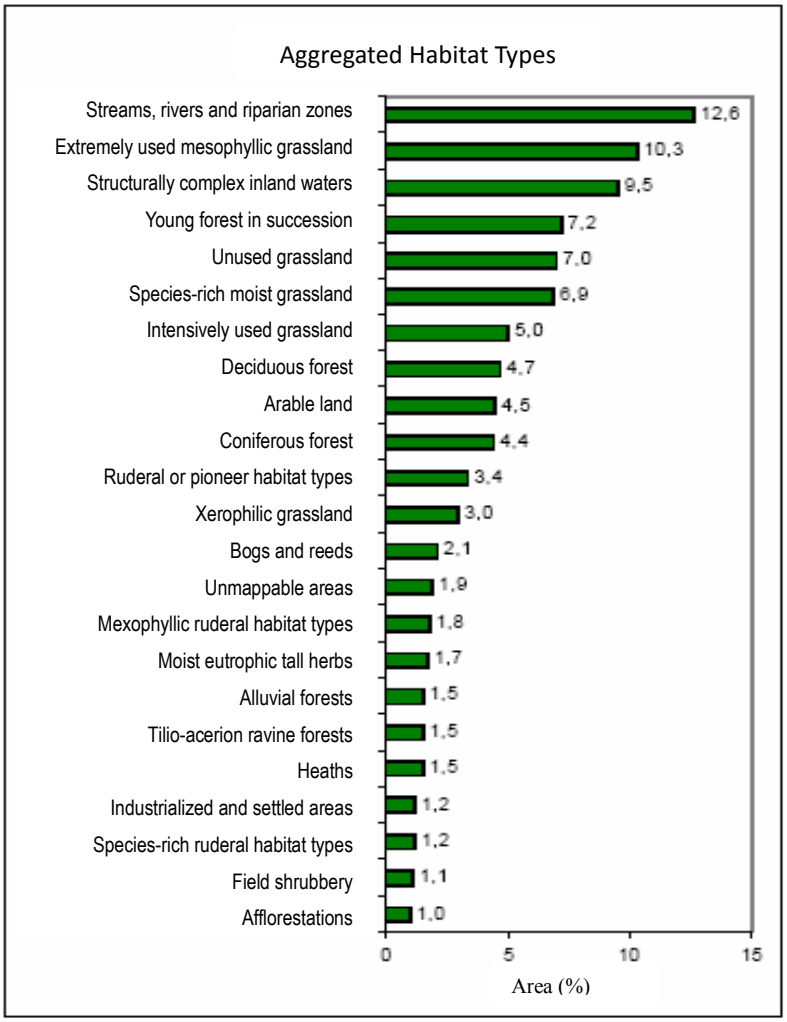
© Klaus Leidorf

Figure 4.3: An aerial photo of the German Green Belt at the foreland of the Harz Mountain
(Source: BUND 2011)

The term 'chain of pearls (Perlenkette),' one of the frequently used words to describe the German GB, expresses its key ecological feature of connecting ('chain') the important core areas ('pearls') nationwide. An NGO expert working for the German GB conservation emphasized the significance of connectivity: "You can't find these connecting biotopes [like the German GB] in Europe any more. Most have been split up, preventing animals from traveling from place to place" (Spiegel Online 2008). Along the former inter-German border, valuable natural habitats could be conserved and developed during the Cold War under the favourable conditions of restricted human entrance, cultivation and intensification of land use as well as the geographical remoteness of the border area (Ullrich, Riecken 2004: 79).

The first habitat survey of the entire German GB was carried out in 2001–2002 by BN/BUND

(Bund für Umwelt und Naturschutz Deutschland) with the support of the German Federal Agency for Nature (BfN) (BN/BUND 2002). The survey identified the overall ecological status of the German GB for the first time. As a result of the survey, 109 different types of habitats were identified, which represent almost all types of habitats in Germany. Almost half of the area (48%) was classified as endangered habitat types according to the German Red List of Habitat Types (BN/BUND 2002: 41; Geidezis, Kreutz 2006: 48). Figure 4.4 shows the distribution of the habitat types of the German GB. Around 60% of the German GB is covered by running or stagnant waters, different kinds of forests, intensively-used mesophilic grassland, unused fallow areas and wet grasslands with abundant species (BN/BUND 2002: 39; Geidezis, Kreutz 2006: 49).



Habitat types with less than 1% of the total German Green Belt area are omitted.

Figure 4.4: Distribution of habitat types in the German Green Belt
(Source: Geidezis, Kreutz 2006)©

The survey identified that around 85% of the German GB area was not degraded and still viable as a functional habitat-connecting system (BN/BUND 2002: 45; Schlumprecht et al. 2002: 410).

As a result, it was proven that a great part of the German GB was still appropriate for preservation of many endangered and protected species and habitats as well as for the maintenance of ecological interconnectivity. The German GB not only connects the core areas within it, but also plays the role of connecting valuable ecosystems in the surrounding landscapes.

● Box 4.1. Types of German protected areas

While the Federal Nature Conservation and Landscape Management Act defines the German protected areas and provides the legal bases for the concerned acts of all Länder, the Länder and their local governments have the authority to designate and manage protected areas (Eben 2006: 264-265).

They are classified by size, purpose and objectives of protection and resulting restrictions on land use. The main types are: Nature Conservation Areas (Naturschutzgebiete: NSGs), National Parks (Nationalparke), Biosphere Reserves (Biosphärenreservate), Landscape Conservation Areas (Landschaftsschutzgebiete), Nature Parks (Naturparke) and the Natura 2000 areas (SPAs, SCAs). In addition, there are Natural Monuments and Protected Landscape Features, which are isolated or in a very small size for protecting individual features of nature or landscape features with special importance for the ecosystem or for giving the landscape variety and structure (BfN 2009). In some areas, two or more types overlap. Most of the German protected areas are very small and the degree of protection is relatively low (Engel, Zimmermann 2007: 202).

The following three types of protected areas designated by the supreme nature conservation authorities of the Länder are collectively termed 'large-scale conservation areas' due to their large sizes. An umbrella brand for the areas, 'National Natural Landscapes (Nationale Naturlandschaften),' was developed in 2005 (BfN 2101a).

Types of protected areas	No.	Area(ha)	Characteristics
National Parks (Nationalparke)	14	1,029,316 (0.54 %)*	• Protection of large areas under no or little human impact • Highly popular for tourism to the German public
Biosphere Reserves (Biosphärenreservate)	16	1,913,858 (3.5 %)*	• Well-suited for sustainable land use approaches and marketing of regional products (e.g. organic farm products)
Nature Parks (Naturparke)	101	9,400,000 (26.5%)*	• Composed mainly of Landscape Protection Areas and Nature Conservation Areas • Varied in achieving the statutory aims of their management and development

* % of the terrestrial area of Germany (as of 2010)

(Compiled based on BfN 2010a)

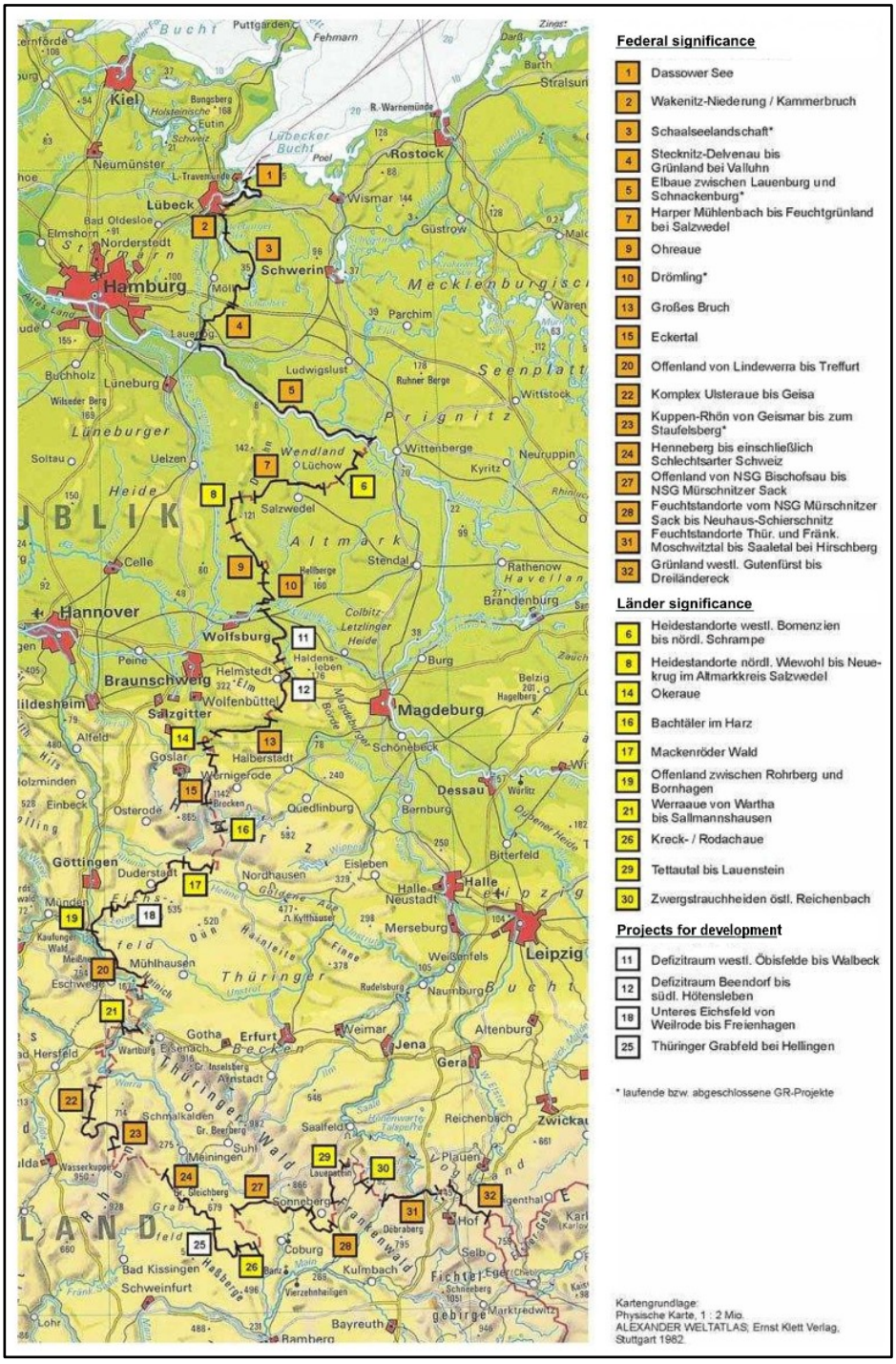
The area of legally protected areas is rather small. The area designated as Nature Conservation Areas (NSGs) (see Box 4.1) amounts to around 28% of the total GB area, and the area of the

proposed SCIs and SPAs of the Natura 2000 (see Box 2.1) is about 38% as of 2002 (BN/BUND 2002: 409). The 76 small and large protected areas are partly or wholly included in the German GB, and 74 of these areas directly border the west side of the GB. With all 150 protected areas considered, the total area increases 12.5 times than the area of the GB itself. The Harz National Park, 3 Biosphere Reserves of Schaalsee, Elbe River Landscape, Rhön, and 11 Nature Parks are representative large protected areas (Geidezis, Kreutz 2006: 48;). By including or bordering the many small and large protected areas, the German GB plays a significant role in connecting habitats, including many endangered habitat types, as the longest and most important national ecological network in Germany.

The other valuable areas in and around the German GB need to be legally protected as core areas of the ecological network by the Länder (Geidezis, Kreutz 2006: 50). There are different options concerning the institutional system for the protection and coverage of the areas (e.g. comprehensive legal protection of the German GB area). In addition, areas that can serve as corridors or buffer zones of the ecological network (see Section 2.1.1) are also important. They need to be managed properly and, when needed, restored to fill the gaps for the connectivity of the ecological network.

In this regard, approximately 63% of the German GB area functions as core areas, linking areas or linking elements[30] of the inter-regional ecological network, according to the above survey. In particular, 32 'focal and development areas (Schwerpunkt- und Entwicklungsgebiete)' were identified as highly important for conservation and restoration of nature at the federal and Länder levels by literature assessment as well as an opinion survey of relevant nature conservation authorities and protected area administrations (see Map 4.2) (BN/BUND 2002; BUND 2002a: 19). The focal and development areas were differentiated by their values and agenda, covering approximately 937 km, or 47% of the length and 65% of the area of the German GB. At least 20 focal and development areas were rated as having national importance, which can form core areas of a national ecological network (BN/BUND 2002: 411; Geidezis, Kreutz 2006: 49).

[30] The Federal Nature Conservation and Landscape Protection Act stipulates the ecological network in Article 21. The Act defines the goal of the ecological network as protection (Bewahrung), restoration (Wiederherstellung) and development (Entwicklung) of functional and ecological interconnectivity in the landscape, as well as the long-term protection of endemic species and populations and their habitats. 'Core areas (Kernflächen),' 'linking areas (Verbindungsflächen)' and 'liking elements (Verbindungselementen)' are the three components with specific functions depending on their ecological values and their natural resource potentials.



Map 4.2: Focal and development areas in the German Green

(Souce: BN/BUND 2002, partly translated by the author)

No systematic survey on the animal and plant species in the German GB has been carried out thus far. According to relevant literature, more than 600 animal and plant species on the German Red List are estimated to inhabit the German GB (BfN 2009: 2). It provides shelter to many rare and endangered species that need undisturbed or almost unused areas such as fallow grassland, extensively used grassland, water bodies and semi-natural forests. These species include Black

Storks (*Ciconia nigra*), European Otters (*Lutra lutra*), European Wildcats (*Felis silvestris silvestris*) and Lady's Slipper Orchids (*Cypripedioideae*) (BUND 2011). Despite no official list of species, over 5,200 species of animals and plants were identified in one survey, completed by about 500 volunteer experts in nine areas of the German GB in a single day (Geidenizis, Kreutz 2004: 135).

In general, a high degree of fragmentation by roads and settlements, pollutants, and intensive agriculture are major threats to nature conservation in Germany, and likewise in the German GB. Around 14.8% of the GB area (2,621 ha) was identified as degraded by agriculture (11%), construction of roads and buildings (2.4%) and intensive forestry (1%) through GIS data analysis of the survey in 2001-2002 (BN/BUND 2002); (BfN 2009). Intensive agricultural practices, which often used excessive fertilizers and pesticides, have been the most problematic. Frequent mowing or intensive fertilization in meadows threatens some rare species such as marsh orchids and butterflies (e.g. Broad-leaved Marsh Orchids, Large Blue Butterflies) (BUND 2011). An analysis carried out later in 2005 by BUND's Green Belt Project Office identified that further destruction occurred due to intensive agriculture (e.g. Großen Bruch in Saxony-Anhalt/Lower Saxony, northern and southern Harzvorland in Saxony-Anhalt/Thuringia and Thuringian/Franken forest) (BUND, 2008: 7).

(a) ICE railway construction between Nurnberg and Erfurt at Sonneberg, Thuringia
(Photo taken by the author, 18.08.2008)

(b) Farming close to the surveillance track in Salzwedel, Saxony-Anhalt
(Photo taken by the author, 24.10.2008)

Figure 4.5: Examples of the threats to conservation of the German Green Belt

Around 450 roads including motorways and railways transect the German GB, threatening its connectivity; more are being built or planned. The BUND provides information on the most prominent examples of such roads (Autobahnen): A38 Göttingen - Halle, A44 Kassel - Eisenach, A72 Hof - Plauen and A20 Lübeck - Wakenitz. In addition, the construction of an ICE (German high-speed trains) section between Nurnberg and Erfurt is ongoing (see Figure 4.5). It is a part

of the German Reunification Rail (Deutsche Einheit Schiene) project, which is a large construction project for traffic connection between former East and West Germany. The section construction, which was suspended in 1999, resumed in 2002, although the economic feasibility of the railway track was highly disputed (BUND 2011). Other problems include afforestation with inappropriate species and the development of industrial parks in and around the German GB (BN/BUND 2002; Geidezis, Kreutz 2006: 50).

In summary, the first habitat survey, implemented across the entire German GB in 2001-2002, concluded that the German GB met all of the essential criteria of a national ecological network with approximately 85% of the area not degraded. Its integrity as an ecological network connecting the habitats of rare and endangered species has overall been maintained in sound condition for 20 years. Its function as an ecological network is important not only for linking valuable habitats along the GB but also for connecting surrounding habitats sideways. It was legally recognized as a component of the German national ecological network in 2009.

The area of legally protected areas is relatively small. In addition, it has been under threats, such as intensive farming and construction of roads and buildings, from the border opening to public access. The proper protection, management and restoration of the degraded areas are necessary for them to serve as core areas as well as corridors and buffer zones. The issue of legally protected areas needs to be examined within the agenda of the institutional frameworks of German GB conservation at the bioregional level.

5. Evolution of the institutional framework of the German Green Belt

Following the analytical framework of the research explained in Section 2.3, Chapter 5 examines the evolution of the institutional framework of the German GB from its creation in 1989 to the present. In order to systematically examine the change of institutional frameworks, the last two decades are divided into three phases characterized by the distinct institutional set-up that elicited change in predominant policy paradigms. By doing so, this chapter addresses the fourth research question (see Section 1.2): "What institutional framework was created for the German GB after German reunification and how has it evolved?"

The discussion of each phase begins with an overview of the external policy environment. The external policy environment serves as background for the set-up and changes of the institutions and often alters the effect of institutions. The overview of the external policy environment also helps the better understanding and identification of the actors and their relationships, as described in the next chapter, since it can affect the interests and attitudes of actors.

5.1. Phase 1: Beginning of the institutional arrangement by non-state actors (1989-1996)

Phase 1 lasted from 1989, when the German GB was created, to the enactment of the first comprehensive institution affecting German GB conservation. In this period, German society was largely affected by post-reunification policy reform and economic problems. As a result, environmental policy was generally pushed back, and interest in the nature of the former inter-German border was very low among the public as well as federal politicians.

The conservation framework of the former border area was first developed by non-state (national) actors immediately following the fall of the Berlin Wall. It was followed by small-scale institutional arrangements in relevant Länder such as Saxony and Bavaria. Along with the rapid removal of border installations, the spatial structure of many parts of the former border area faced big changes by land use change, notably intensive farming.

5.1.1. External policy environment

Post-reunification economic problems and the slowdown of environmental policy

By the beginning of the post-reunification period, institutional adjustment and reform were carried out vigorously in many parts of the unified country, particularly aiming at the *Aufbau Ost* (agenda for economic recovery in eastern Germany). The economic situation, particularly in the New Länder, became worse and unemployment rate rose dramatically. The general public and government's concern about environmental issues declined (Wurzel 2002: 1) and the economic issues and problems of unemployment became policy priorities. Public participation in policymaking was also curbed in order to accelerate industrial and public development projects (Glaeser 1995: 78).

Figure 5.1: A memorial board indicating the former inter-German border[31]

With the formal reunification in 1990, the environmental laws of the FRG were adopted by the five New Länder (Glaeser 1995: 78). The protected area system of the FRG was also introduced very quickly. During the last months of the GDR regime in 1990, the last freely elected People's Chamber (Volkskammer) declared about 7% of the GDR area as National Parks or Biosphere Reserves (Deutschen UNESCO-Kommission e.V. 2007: 84).

In the meantime, the serious environmental pollution of air, water and soil in the GDR was disclosed after the removal of the border. Several environmental projects and research programmes for the ecological restoration and development in the New Länder were implemented with substantial funds to improve environment in the New Länder and achieve uniform environmental conditions throughout the entire country. However, the big economic slump following reunification made it difficult to accomplish the achievement of environmental objectives in the New Länder. Some academics criticized that the environmental improvement in the New Länder was hindered partly because the highly complex West German legal and administrative system was applied without considering the very different system of the GDR (Engel, Zimmermann 2007, 2007: 181).

[31] The board is located at the federal motorway (B80) between Eichenberg, Hesse and Hohengandern, Thuringia, the board says that Germany and Europe were divided until 12:25 on 12 November 1989.

Removal of border installations and different attitudes regarding the former border

Remaining installations along the former border were generally not of interest to the public and politicians, including the local people and the related local authorities. Most local people wanted to eliminate the inhumane border installations as quickly as possible. Some experts interpret the local peoples' strong adversity towards the relics of the border area as linked to the 'coming to terms with the past (Vergangenheitsbewältigung).' According to former East Germans, the past was often regarded as the squaring-up (Abrechnen), incapacitation (Entmündigung) or colonization (Kolonialisierung) of the history of the GDR. Thus, they scarcely took or regarded very critically advice from the preservationists of former West Germany, who wanted to protect the border installations (Becker 2004: 14).

The border installations were removed very quickly. Towards the end of 1993, almost 3,000 km of fences, concrete pieces of vehicle-barricading ditches as long as 730km, 830 command posts and watchtowers, aligned lights, walls and bunker systems were torn down (Becker 2004: 31). The federal government delegated some construction to county authorities and individuals. Surveillance track, maneuver roads, and bridges were excluded from the removal (Becker 2004: 32). By the latter half of the 1990s, it looked as if there had been no inter-German border (Ritter 2007: 141).

5.1.2. Institutional framework

Before the reunification, several biological surveys were carried out in the border area by some conservationists of West Germany in the 1980s, albeit with severe limitations. Nature conservation on the border was neither an issue of government policies in the two Germanys nor on the agenda of the inter-German talks. The inter-German border was an arena for political confrontation and the forefront of the tension between the two Germanys at the governmental level. In the reunification process, it was also outside of the main interests of the unified federal government, as priority was given to the economic and social integration of the united country. No institutions concerning the conservation and management of the habitats on the former border were set up at the federal level.

Initiatives from NGOs and Länder

The first decisive action for the conservation of the inter-German border area came from NGOs and conservationists following the fall of the Berlin Wall. The BN in Bavaria organized a meeting on 9 December 1989 in Hof, a small town in the Bavaria-Saxony-Czech border region.

More than 400 nature conservationists from East Germany and northern Bavaria attended this meeting, yielding a surprisingly higher attendance rate than expected by the organizer. They unanimously adopted a resolution which, for the first time, stated the concept of the **Green Belt** (Das Grüne Band or Grünes Band in German)[32].

Figure 5.2: Logo of the German Green Belt
(Source: BUND 2011)

The resolution demanded that "the border stripes between the FRG and the DDR should be protected preferentially as ecological backbone of the central Europe. […] Furthermore, large-scale trans-border protected areas should be accomplished or be connected to each other" (BUND 2002a: 10; Geidezis, Kreutz 2006: 48; Frobel et al. 2009: 400). The meeting marked the beginning of the nationwide German GB project. Following the resolution, about 40 NSGs in the border area and adjacent semi-natural areas were created at a small scale in the southern section of the German GB as a follow-up to the faunal inventory survey carried out in the 422km long border area between Bavaria, Thuringia and Saxon in 1990-1991 (Frobel et al. 2009: 400)[33].

At the Länder level, Thuringia and Saxony took primary measures in their own regions. First, the State of Saxony brought legal protection to all GB areas within its territory. All of the GB areas in Saxony came under temporary protection in 1990 on the basis of results of a bird survey carried out by the BN in Bavaria with financial support from the Bavaria Ministry of Environment. Followed by the intensive institutional arrangements of the then Environmental Agency in Plauen (Staatliche Umweltfachamt Plauen), 8 NSGs, 2 Natural Monuments (Flächennaturdenkmale) and 3 Conserved Landscape Elements (Geschützte Landschaftsbestandteil)[34] were designated in Vogtland County in 1996. They were located along 41km of land with a total area of 744 ha (BN/BUND 2002: 255). Various measures for ecosystem restoration and landscape management (Pflege), such as sheep grazing, have since taken place in those areas. Furthermore, the entire area became designated as SACs and SPAs of the Natura 2000 in 2002. The Saxony region of the German GB is also the longest connected

[32] It seems that the name of the Green Belt (*das Grüne Band* or *Grünes Band*) was created rather spontaneously. Dr. Kai Frobel of the BN, one of the key founders of the German GB project, proposed the name "das Grüne Band" to highlight that the terms such as 'demarcation line' or 'death stripe' were no longer relevant (Badische Zeitung 2009).

[33] A survey concluded that many bird species on the German Red List inhabited the border area, identifying 131 breeding bird species (59 of them on the German Red List), 40 dragonfly species (26 of them on the German Red List) and over 600 plant species (120 of them on the German Red List) (BN/BUND 2002: 236).

[34] The three types of protected areas can be designated by the authority of the local government.

and protected portion of the entire GB (NABU Sachsen 2011; BImA 26.08.2010).

The background of prompt and decisive institutional framework for the GB conservation of Saxony is related with the policy environment of Saxony during the period. First, the region of the GB belonging to Saxony is not long (41km), and thus it was relatively easier to design and apply conservation measures. Another significant background is concerned with the administratively transitional period of the New Länder immediately after the reunification. Many administrative systems and institutions of the New Länder had to be revised, abolished or newly established. In addition, the ownership of the border area was often unclear. According to an interviewee who was involved in the institutional set-up, the officials of the two counties in charge of nature conservation could take initiatives to design the necessary institutions for land use and succeed in enacting protection of the entire GB area at a time under the changing governance situation (Interviewee 6, 2008).

Unlike Saxony, the State of Thuringia contains the longest section of the GB (763km). Thuringia, a leading federal state in German GB conservation, established the GB strategy for Thuringia in 1998 together with the logo of the Thuringia GB. The strategy acknowledged and highlighted that nature conservation was a priority before other land uses in the GB, and that the conservation aim of a connected ecological network was accepted. It consists of the following five guidelines (Pönicke 2006: 64; Thüringer Ministerium für Landwirtschaft 2004):

- Nature has priority in the GB and the unique natural area shall be preserved and further developed;
- The GB shall serve future generations by preserving its part of the German history and helping them to understand it;
- The economic potential of the GB shall also be used for tourism and local recreation;
- The complicated ownership shall be clarified and newly organized in a timely manner; and
- Future land use shall be sustainable, preferably without conflict and arranged in consensus with the public.

The above guidelines demanded the application of the principle of sustainability to not only nature conservation but also to the interests of agriculture and forestry through natural succession, extensive use and management (Pflege). Many exemplary policies and local projects in the Thuringia GB have been carried out under the framework of these guidelines, such as the identification of land for the project, the creation of large-scale ecosystems by networking and

linking semi-natural areas, and the proprietary development of land. Additionally, concrete guidelines were presented for different areas, such as nature, landscape, forestry and settlement (BUND 2002a: 46; BN/BUND 2002: 261). In particular, policy measures of farmland reform (Flurneuordnung)[35], such as land purchase, land swap and land consolidation, contributed to effectively securing valuable habitats and linking fragmented habitats in the GB (BN/BUND 2002: 46; Interviewee 16, 2008). For instance, land swap was a useful policy measure bringing positive results to both the government and individuals. Through continuous discussions among local authorities, land owners and farmers, land that was inadequate for farming but valuable for landscape conservation were exchanged with land in other places that was more suitable for farming.

However, the institutions of the two Länder were generally limited in scale and were sometimes incompatible with ongoing overall political and social reform processes in the post-reunification period at the Länder level. At the federal level, the commitment to the conservation of the German GB was almost invisible except for several political statements, such as the first political statement delivered in November 1990 by the then Federal Minister for Environment, Nature Conservation and Nuclear Safety (BMU), Klaus Töpfer: "Special efforts are needed in the former border area to conserve as many natural and near-natural areas as possible as the Green Belt (Riecken et al. 2006: 5)."

Beginning of land use conflict

A few weeks after the opening of the border, people participated in destructive uses of German GB habitats, such as farming, landfill of construction waste and road construction. Among them, intensive farming made a large impact on GB habitats. Some farmers from former West Germany used the fallow land of the GB, which was almost out of legal regulation at that time, without considering land ownership. By the mid-1990s, almost 11% of the GB area (approximately 2000ha) was changed into intensive farmland after decades of being fallow land (Frobel et al. 2009: 400; Geidezis, Kreutz 2006:50).

Farming could be further facilitated in the area, because the border installations, including mines, were almost completely removed and the remaining concrete surveillance tracks were used for farming roads. Under these favourable situations for agriculture, gaps fragmenting the German GB were created - even 5-7km long ones in some areas -. The intensive farming problem was

[35] *Flurneuordnung* is a process of agrarian reform which aims for the reform of agricultural and forestry land holding. It is also called *Flurbereinigung* or *ländliche/landwirtschaftliche Neuordnung*.

particularly serious in areas where soil quality was good, such as in the northern foreland of the Harz Mountains in Saxony-Anhalt. In contrast, the northern area of the Elbe River region, where soil quality was not adequate for agricultural activity, evaded the heavy farming (Frobel et al. 2009: 400).

Meanwhile, some other land was abandoned due to unclear ownership and the absence of post-reunification administrative authority. Some of this land, which had no vegetation or woods, was subject to the increasing natural succession. Many conservationists assessed this phenomenon as the loss of valuable open landscape and the deterioration of habitat qualities (Becker 2004: 68), as some specific species that live only in such habitat conditions could no longer survive.

5.2. Phase 2: Controversy on the federal institutional arrangement and Europeanization of the German Green Belt concept (1996-2005)

Phase 2 began with the legislation of the federal law in 1996, which provoked considerable controversy on the privatization of federal land in the German GB. Upon entering the 2000s, the federal environmental policy was strengthened with the initiation of the new Green Cabinet, and the influence of the EU on German policies grew. The change of the external policy environment contributed to the federal government's increasing commitment to and support of German GB conservation. Additionally, the concept of the German GB extended to regional conservation cooperation along the entire former Iron Curtain across Europe, and the European GB initiative was launched in 2004 with the strong support of the German federal government.

5.2.1. External policy environment

Environmental policy gained a newfound momentum in 1998, when a new centre-left government of the red-green coalition between the SPD (Social Democratic Party) and the Alliance 90/The Greens (Bündnis 90/Die Grünen) replaced the old centre-right coalition. The new administration was followed by many environmental initiatives, such as the introduction of an eco-tax and the gradual phasing out of nuclear energy production (Engel, Zimmermann 2007: 181).

Moreover, the influence of international and European actors such as the EU and the OECD (Organization for Economic Cooperation and Development) became more and more profound. The character of multi-level governance was strengthened. In particular, decisions regarding areas, such as agro-environment, water management and nature conservation, were increasingly

transferred from the member states to the level of the EU. The minimum standards set by the EU constrained the German federal legislation and ordinances. While the federal government was accused by the Länder of trying to expand its competence by agreeing to the EU's environmental legislations (Engel, Zimmermann 2007: 182), the federal government blamed some Länder for the non-implementation of EU legislation. A representative example is the designation of SACs according to the Habitats Directive (see Box 2.1).

5.2.2. Institutional framework

In contrast to commitment to conservation and institutional set-up for the German GB conservation made by NGOs and some New Länder in Phase 1, the first federal-level legislation that made a direct impact on the GB in this period was rather adverse to nature conservation.

Emergence of the land ownership issue as a key institutional challenge

The controversial issue of the land ownership of the German GB is rooted in 1961, when the GDR government constructed the Berlin Wall and further established military installations along its border with the FRG. In the process, many houses and land in the border area of the GDR were dispossessed, and most of the dispossessed properties were insufficiently compensated for or not compensated at all (Becker 2004: 69).

With reunification in 1990, almost all borderland was transferred and subject to the federal government of the unified country under the managerial responsibility of the Federal Ministry of Finance (BMF) on the basis of the Unification Treaty (Einigungsvertrag) as well as the Law on the Conclusion on the Allocating the Properties Previously Owned by the People (hereafter Law of Property Allocation)[36] enacted on 22 March 1991. The regulation on ownership led to various controversial discussions and, to some extent, exacerbated the problems of unsettled ownership. The federal government adopted the principle of 'return prior to compensation' of the former borderland to clarify such complex ownership problems (Becker 2004: 69; BN/BUND 2002: 219).

In 1996, the Law on Sale of Land in the Berlin Wall and Borderland (hereafter Borderland Law)[37] was enacted and put into effect. It regulated restitution to former land owners as well as

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[36] *Gesetz über die Feststellung der Zuordnung von ehemals volkseigenem Vermögen* (in short, *Vermögenszuordnungsgesetz: VZOG*)

[37] *Gesetz über den Verkauf von Mauer- und Grenzgrundstücken an die frühren Eigentümer* (in short, *Mauergrundstücksgesetz: MauerG*)

the privatization of the borderland. According to the Borderland Law, former private land owners could reclaim their land that had been dispossessed by the GDR by paying 25% of the current market land price, unless the federal government needed the land. For landowners, this law meant that 75% of the price was compensated by the government. According to the BMF, a total of 4,053 restitution applications were accepted by the deadline of 30 January 1997 (BN/BUND 2002: 219; BUND 2002a: 6-7).

Additionally, the land not claimed through restitution was to be disposed of by sale in the property market according to the Federal Budgetary Regulation (Bundeshaushaltsordnung) (BN/BUND 2002: 219). Agencies under the BMF such as the Federal Agency for Real Property (Bundesanstalt für Immobilienaufgabe: BImA) sold the federal land in the German GB. Nature conservation was not taken into consideration in these instances.

The federal land in the German GB was under the authority of the BMF, and the BMU, a federal environmental government authority responsible for nature conservation was a rather weak ministry (Engel, Zimmermann 2007: 184). Many federal and local conservation organizations highly criticized and opposed borderland privatization and the sale of land to individuals (Interviewee 2, 2008; Interviewee 3, 2008; Interviewee 15, 2009). They argued that federal land should be transferred free of cost to respective Länder or nature conservation organizations for the purpose of nature conservation (BN/BUND 2002: 270).

In reality, all of the New Länder profited from the land sales. Sale revenue was invested for economic, social and cultural projects of the New Länder (Frobel et al. 2009: 402; Deutsche Welle 2005), for example, the hiking trail project in Wartburg County, Thuringia. Around 80% of the German GB area in Wartburg County was the property of the federal government, some of which was sold to farmers. A part of the sale earnings were used to support the creation and operation of the border hiking trail in Wartburg measuring 167km, which included 64km of the German GB (Interviewee 15, 2009) (see more Section 6.2.1). It was ironic that funds from the German GB land sale, which could potentially harm GB habitats, financed the project to promote GB conservation. The sale of federal land served as a way to finance the underdeveloped New Länder, which was one of the primary policy goals of the united German federal government.

The primary problem was that the privatized land could easily fall under danger of ecological destruction, notably through intensive farming. The local monument protection authorities were also critical of the Borderland Law. The historical monuments of the former inter-German border could potentially have been widely promoted through the comprehensive planning of the

concerned Länder and counties, if the federal government compensated the old landowners and kept its ownership of land in the borderland (Becker 2004: 69-70).

As a result of the restitutions, around 20% of the GB area became private property and around 65% remained in the ownership of the federal government. Additionally, around 13% owned by municipalities and other authorities and around 2% by NGOs, according to a survey on the land tenure of the German GB in 2002 (BUND 2002b: 2; BN/BUND 2002: 224; Geidezis, Kreutz 2006: 50). Most interviewees expressed their deep concerns regarding the problem of land privatization in the German GB during the interviews conducted in 2008, when land transfer negotiations between federal and Länder governments were deadlocked. Land ownership became a significant institutional issue in the governance as well as conservation of the German GB.

Meanwhile, environmental NGOs began a project to purchase private land of conservational importance and to protect and manage it directly to counter the problem of German GB land ownership. In October 2000, the BUND first purchased land plots in three sites: Altmark in Saxony-Anhalt, and Eichsfeld and Sonneberg in Thuringia. To raise funds for the land purchase as well as other German GB conservation activities such as lobbying and publicity, the BUND launched the Green Share (Anteilschein am Grünen Band) programme in November 2000. The Green Share programme consists of a donation certificate which takes the form of a symbolic share certificate of the German GB land and is given to donors of more than 65 Euros (see Figure 5.3). The project has been successful, with close to 10,000 donators as of 2008 (Interviewee 2, 2008; Interviewee 3, 2008), and has made possible the purchase of approximately 550ha of land in 6 sites in need of protection or restoration as of February 2011[38].

Figure 5.3: Green Share certificate

[38] The 6 sites are located in: Salzwedel, Altmark County in Saxony-Anhalt; Großes Bruch on the border between Lower-Saxony and Saxony-Anhalt; Eichsfeld on the border between Thuringia, Lower-Saxony and Hesse; Ulstersack (Rhön) on the border between Bavaria, Hesse and Thuringia; Hildburghausen Conunty in

Approaching the early 2000s under the new Green Cabinet, the Federal government directed more attention to biodiversity and nature conservation and amended the Federal Nature Conservation Act (Bundesnatureschutzgesetz) in 2002. Nature conservation concerns were included in regulations on agriculture, forestry and fishery, and the designation of a higher number of nature conservation areas and their connections, namely the ecological network (Biotopverbund), were promoted (Breton et al. 2007: 181, 203). One of the most notable achievements of the amendment was a new nationwide obligation that the Länder shall create a cross-Länder network of connected habitats encompassing at least 10% of the areas of Länder (Article 20, Section 1).

In accord with the institutional backdrop of the increasing recognition and political support of the German GB among federal politicians, a stepping stone for a breakthrough to solving the problem of federal land was made in 2003 at an international conference on the German and European GB organized by the Federal Agency for Nature Conservation (BfN) and the BMU[39]. At the conference, the BMF and the BMU proposed the transfer of the federal land in the German GB to the Länder for the purpose of nature conservation. This proposition was included in the declaration adopted at the conference:

> The participants of the conference call on the federal states to accept the offer of the federal government to transfer areas in public ownership with no existing legal demands within the former border strip to the federal states for free. This should happen fast and un-bureaucratically (Bonn Declaration, Engels et al. 2004).

The related Länder initially hesitated to accept the proposal. One hypothesis was that the proposal would mean the abandonment of revenue from land sales, from which the Länder had reaped the benefits (Frobel et al. 2009: 402). In the autumn of the same year, all of the related Länder, except for Mecklenburg-Western Pomerania, revealed their agreement to the proposal in principle (Der Tagesspiegel 09.04.2010). After the agenda was put on the table, long and laborious negotiations and institutional arrangements between federal and state level governments continued, which are discussed in further detail in Phase 3.

Development of the German GB into the European GB

The importance of habitat networking in biodiversity conservation was increasingly recognized

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Thuringia; and Sonneberg Conunty, Thuringia (BUND 2011).

[39] 'The International conference on Perspectives of the Green Belt: Chances for an Ecological Network from the Barents Sea to the Adriatic Sea?' was held on 15~16 July 2003 in Bonn, Germany to celebrate the 10th anniversary of the BfN.

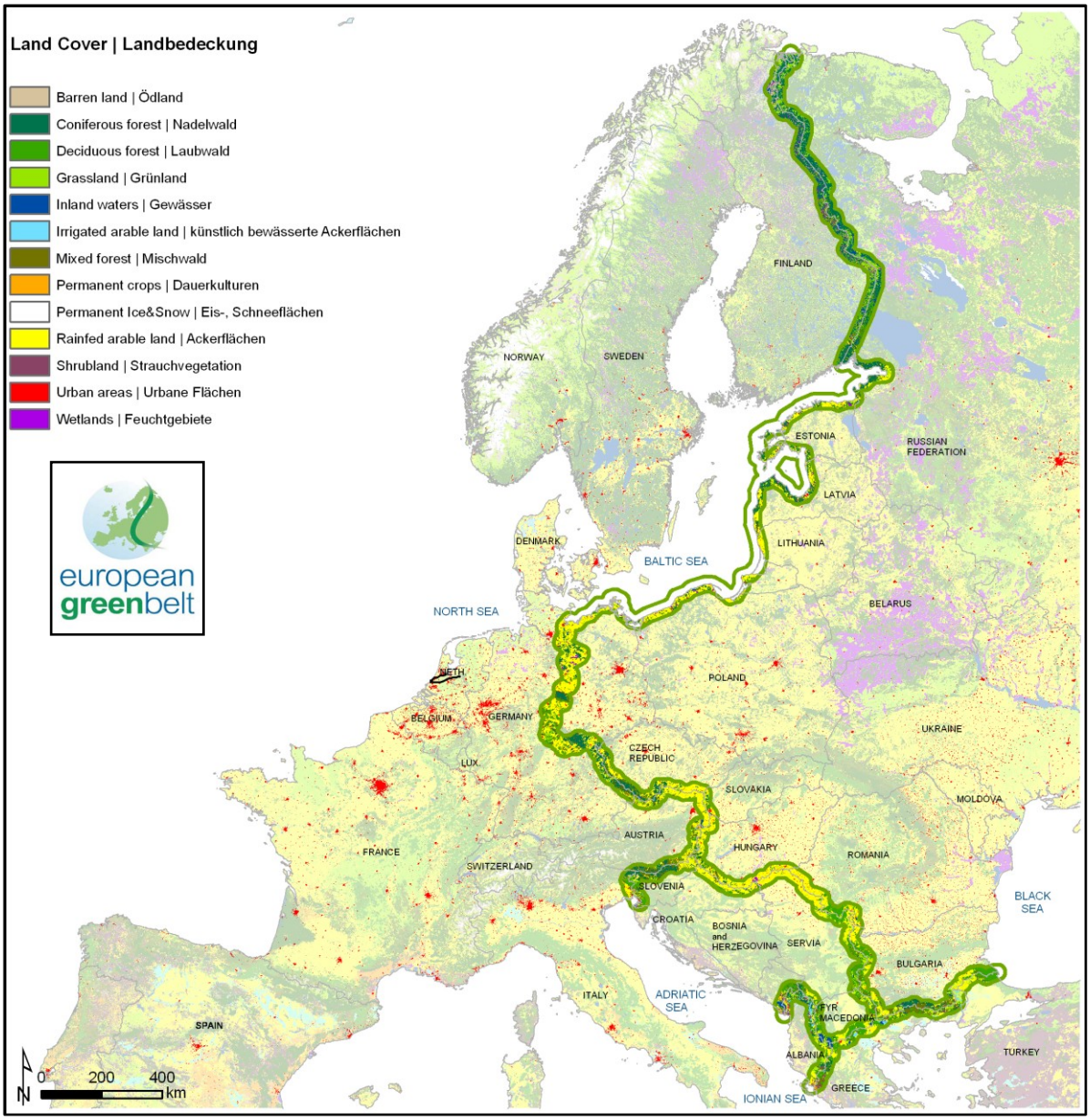
not only nationally but also at the international level. In Europe, the concept of the German GB was used as a model to connect the valuable large habitats along the entire former Iron Curtain.

During the Cold War, nature in many parts of the former Iron Curtain were well protected or revived like in Germany, such as the old boreal forest along the border between Finland and the Russian Federation as well as many natural and cultural landscapes and mountain regions in the Balkan Peninsula (Riecken et al. 2006; Riecken, Ullrich 2009). However, since the fall of the Iron Curtain in 1989, rapid developments, including the construction of infrastructure connecting the two former Eastern and Western Bloc countries and intensive land use, have taken place along the former Iron Curtain, resulting in negative impacts on nature.

Many bilateral and sub-regional conservation activities have emerged against the increasing ecological degradation of revived border areas. To combine and consolidate the activities into a joint initiative, the idea of the European GB was first officially proposed and discussed at 'the International Conference on Perspectives of the Green Belt' organized by the BfN and the BMU from 15 to 16 July 2003 in Bonn, Germany (Riecken et al. 2006: 7). An international working group meeting following the conference, held from 8 to 12 September 2004 in the Fertő-Hanság National Park, Hungary, launched the European GB and adopted a draft of the Programme of Work, which set out the institutional structure, coordinating mechanisms and future agenda between 2005-2010 under seven goals[40] (Terry et al. 2006).

[40] - Goal 1: The establishment of the European Green Belt as a functional ecological network.
- Goal 2: The Green Belt becomes an established and respected mechanism for the sharing of knowledge, experience and best practice on transboundary cooperation for nature conservation and sustainable development.
- Goal 3: The Green Belt becomes a viable tool to assist the sustainable development of communities at the local level within its range.
- Goal 4: The Green Belt becomes an ecological laboratory to study landscape and continental scale ecological processes and the response of habitats and species to major ecological changes.
- Goal 5: The Green Belt operates with a transparent and efficient structure that ensures the largest participation possible of all interested stakeholders.
- Goal 6: The Green Belt becomes a widely acknowledged initiative within participating countries and among international organizations.
- Goal 7: The Green Belt is recognized as a 'brand' for products and activities that enhance local and regional sustainable development and nature conservation.

The European GB passes through many different regions, showing a great diversity of political, biological and socio-economic conditions in 23 countries. It is approximately 8,500km long from the northern tip of Europe at the border between Finland and the Russian Federation, crossing through Germany, through the borders of the South-eastern European countries and ending at the Black Sea, Ionian Sea and Adriatic Sea (see Map 5.1.).



The map is slightly changed with inclusion of the country names and the logo from the original map, which is based on http://www.eea.europa.eu (© EEA, Copenhagen, 2008).

Map 5.1: European Green Belt indicated on the map of biogeographical regions

(Source: Renetzeder et al. 2009)

The European GB aims to function as the largest transboundary ecological network throughout Europe as well as to promote socio-economic development in rural border areas that have

suffered from shrinking populations and declining economies. It is divided into three regional sections: Fennoscandian and the Baltic[41], Central Europe and South-eastern Europe. In each regional section, regional coordinators are appointed[42]. National focal points consisting of government agencies, academic institutes or environmental NGOs are also established in each member country. Since 2004, the secretariat has been hosted by the IUCN Programme Office for South-Eastern Europe in Serbia, working for the overall coordination of network activities.

As a large-scale transboundary conservation initiative, the European GB has faced challenges in the coordination of various actors and multi-level institutions at local, regional, national and international levels. From the aspect of governance, it is not a formal inter-governmental initiative but a non-governmental coalition, with environmental NGOs and research institutes as the main actors. High-level political commitment and support have been lacking in many participating countries, and there have been no institutions or directives at the European level to support the European GB.

The actors involved in the German GB have played an active role not only in initiating the European GB but also in operating and funding its activities. The German GB project office of the BUND serves as a regional coordinator of the Central European section, and the BMU has been a major financial supporter of projects and meetings. With the creation of the European GB, a pan-European ecological network, the German GB policy goals have come to be linked to and integrated at the European level.

5.3. Phase 3: Significant progress of the institutional framework for German Green Belt conservation (2005-present)

Coming to Phase 3, the institutional framework for German GB conservation began to be stabilized. The transfer of federal land to the Länder through the policy of the National Natural Heritage that was established in 2005 made significant improvements for securing the

[41] The path of the Baltic Sea section between the Gulf of Finland and Lübeck in Germany was finally decided in 2008 along the coastline with respect to the involvement of a variety of people in sustainable regional development. Up until then, the exact path was under debate, marked by a dashed line. The two options were to either follow the outer borders of the former Soviet Union's Exclusive Economic Zone, located 12 miles away from the coast, or to follow the coastline where the typical features of the European GB (e.g. access restriction of civilians due to military use and relatively undisturbed habitats) would actually be found. (Riecken et al. 2006: 8-9; IUCN Regional Office for Europe 2009: 1).

[42] Coordinators of each regional section are: Baltic Fund for Nature of Saint Petersburg Naturalist Society, Russian Federation (an academic institute) for the Fennoscandian and Baltic section; BUND-GB project office, Germany (an environmental NGO) for the Central European Section; and Stiftung Europäisches Naturerbe (EURONATUR) (a foundation), Germany for the South-Eastern section.

permanent conservation of a large part of the German GB land. The land transfer could be realized only after prolonged and difficult negotiations between the federal and Länder governments due to arguments over the financial costs that the Länder should bear. However, about a third of the privately owned German GB land is still under no conservation institutional framework. The 2010 amendment to the federal conservation act is expected to strengthen the institutional framework for German GB conservation by the integration of ecological, socio-political and institutional elements based on a bioregional approach. The new category of protected areas, National Natural Monuments, is proposed as a potential institution toward this integration.

5.3.1. External policy environment

Approaching the late 2000s, Germany's nature conservation policies continued to gain momentum. An example is the adoption of the National Biodiversity Strategy in November 2007. Until then no national biodiversity strategy including detailed nature conservation agenda had yet been adopted at the federal or Länder level. The strategy includes German GB conservation as a joint flagship project of federal and Länder governments and nature conservation organizations to develop the German GB into valuable habitats for humans and nature (BMU 2007: 24).

The German federalism reform in September 2006 brought another distinctive change in the nature conservation policy environment. One of the key elements of the reform was the redistribution of legislative competence between the Federation and the Länder. Based on this reform, the federal conservation act was amended again in 2009, with the revised title of Federal Nature Conservation and Landscape Management Act (Gesetz über Naturschutz und Landschaftspflege), which has been in effect since 1 March 2010 (BMU 2010a: 6).

According to the previous act, the authority of the federal government was limited to establishing general provisions via a framework law, which had to be reflected in the nature conservation laws of the Länder. Due to the amendment, the federal government can create and fully regulate standardized national nature conservation legislation (BMU 2009: 24; BMU 2010a: 7). In addition, the general principles of nature conservation adopted by the federal government cannot be amended by the Länder. It is expected that the amendment will contribute to reducing the asymmetry among the Länder policies. The policy asymmetry among the Länder has often been an obstacle for the conservation of large ecosystems involving multiple Länder, which demands considerable efforts and time to coordinate and harmonize various policies and

institutions.

The inclusion of the 'real compensation (Realkompensation or Ökokonto in German)' policy is another noticeable change in the amended act. According to this regulation, parties who perform actions that cause harm to nature (e.g. road construction, development of industrial sites or building projects) shall compensate for the encroachment or degradation in the ecosystem or the overall appearance of landscape. The offsetting process generally involves the upgrading of other sites to balance out or ameliorate the impairment of natural functions caused by the project. If practical compensation and substitution measures cannot take place, compensation in the form of financial payments can then be considered (BMU 2010a: 13). For instance, the State of Saxony-Anhalt declared that it would introduce the policy in the GB to upgrade the nature conservational value of its portion of the GB (Staatskanzlei des Landes Sachsen-Anhalt 06.08.2010). Many other Länder still prefer financial compensation (Der Tagesspiegel 09.04.2010).

Additionally, the National Natural Monument (Nationales Naturmonument) was newly included in the federal protected area categories, which corresponds to Category III Natural Monument in the IUCN protected area categories. It denotes a legally protected area which has outstanding significance for scientific, nature conservational, cultural, historical or regional (landeskundlichen) reasons due to its rarity, originality and aesthetic value (BfN 2010).

5.3.2. Institutional framework

Land transfer through the National Natural Heritage policy

The transfer of the federal land in the German GB to the Länder could not be accomplished for several years after its proposal by the BMU in 2003. The coalition agreement between governing parties, CDU/CSU and SPD in November 2005 provided a breakthrough[43]. It concluded that the representative nature conservation areas under the property of the federal government ranging from 80,000 to 125,000ha shall be transferred free of charge to the Länder, German Federal Foundation for Environment (Deutsche Bundesstiftung Umwelt: DBU) or other nature conservation organizations. The major transfer areas included approximately 7,000ha of the German GB land as well as the former sites of military exercises and the closed brown coal mining areas. In addition, the land sale was to stop immediately for the prompt protection of these areas (CDU et al. 2005; BfN 2010).

[43] The relevant part of the coalition agreement is attached in Appendix IV.

Those terrestrial and water areas of high conservational value under the property of the federal government were to be transferred by the policy of National Natural Heritage (Nationales Naturerbe)[44] to non-profit nature conservation organizations, including foundations under the Länder, in order to guarantee their long-term conservation. The organizations would then take the responsibility of conservation and management of the sites by fulfilling the strategies for management (Pflege) and use, promoting wilderness development, establishing perspectives for regional value creation and employment and increasing public awareness of the National Natural Heritage (BfN 2010).

In the first step of the land transfer, the criteria for land selection were decided. For instance, National Parks, Biosphere Reserves, federal large-scale conservation projects, Natura 2000 and the German GB were included in the criteria. Then, both federal and Länder governments developed the initial transfer list[45]. In total, an area of approximately 100,000ha, including 7,000ha of the GB, were selected in May 2006 (BMU 2010; BfN 2010). The German GB was highlighted as a prominent element of the National Natural Heritage in related documents and throughout the media. The transfer of the remaining 25,000ha was confirmed at a later time at the coalition agreement by the new government of CDU/CSU and FDP (Free Democratic Party) in 2009 (BfN 2010).

Long process of negotiation between federal and Länder governments

In June 2006, however, the Budget Committee (Haushaltsausschuss) of the German Bundestag (Lower House of Parliament) linked the personal expenses of federal foresters with the land transfer of the National Natural Heritage. This meant that the Länder were obliged to cover the costs, and this condition also applied to the German GB (Frobel et al. 2009: 402). It was a big setback to the policy implementation. The Länder, particularly the New Länder, which were mostly faced with economic difficulties, were reluctant to bear the incurred costs. The inclusion of the condition was followed by a few years of long and intensive discussions and negotiations between the relevant federal government authorities (e.g. BMU, BImA) and Länder to compromise on land transfer conditions. The relevant environmental NGOs harshly criticized the lasting financial negotiations between the BMF and the Länder and urged a prompt

[44] The National Natural Heritage is no category of the German protected area system nor is related with the World Natural Heritage of the UNESCO.

[45] The German Federal Foundation for Environment (DBU) took over the largest area, approximately 46,000 ha, consisting of 33 areas in 9 Länder in May 2008. The areas are open landscapes created due to the military exercises, now inhabited by rare species (Deutsche Bundesstiftung Umwelt 2011).

agreement.

Thuringia first reached a successful compromise with the BMU and the BImA in April 2008 and signed an agreement for the take-over of around 4,000ha[46] of its section of the German GB on 9 November 2008. Through this property arrangement, the transferred land came to belong to the Thuringia Foundation for Nature Conservation (Stiftung Naturschutz Thüringen) under the federal state from January 2010. The Thuringia government bears 520,000 Euros in installments of 8 years for the expenses incurred by the land transfer (Stiftung Naturschutz Thüringen 2011; Interviewee with 14, 2009).

Subsequently, the Länder of Brandenburg, Saxony, Mecklenburg-West Pomerania and Lower Saxony reached agreements for land transfer. The signing of such an agreement by Saxony-Anhalt on 28 January 2011 completed the transfer of close to 7,000 ha to the six Länder (BMU 28.01.2011)) (see Table 5.1). The completion of the planned transfer of the federal land took five years after federal policymaking on the National Natural Heritage and two years after the first agreement by Thuringia.

Table 5.1: Status of the transfer of federal land in the German Green Belt

Länder	Transferred Land area (approx. in ha)	Year of Agreement
Thuringia	4,000	2008
Brandenburg	30	2010
Saxony	200	2010
Mecklenburg-West Pomerania	613	2010
Lower Saxony	327	2010
Saxony-Anhalt	1,700	2011
In total	6,860	

(Complied based on BImA 26.08.2010; Der Tagesspiegel 09.04.2010; documents obtained during the interviews)

For the 15 years between the 1996 Borderland Law and the implementation of the policy of the National Natural Heritage in 2008-2011, the conservation of approximately two thirds of the German GB area owned by the federal government was under threat of land privatization and faced difficulties in the implementation of necessary measurements for proper conservation and

[46] The exact area of the land cannot be estimated now. The legal claims of the former land owners still exist. If the claims are authorized, some land will return to them. Then, the amount of around 3,600-3,800ha would remain to the foundation (Stiftung Naturschutz Thüringen 2011).

management. This was due to discord between the primary institution of federal land ownership and the responsibility of Länder authorities for nature conservation.

Overall, the total transferred area of land amounts to about 7,000ha, which, when compared to the data as of 2002, is close to 60% of the all federal land in the German GB and about 40% of the entire German GB area. Although further land transfers are planned, it was pointed out that the use of around 1,000ha which previously belonged to the Organization for Land Management and Utilization (Bodenverwertungs- und -verwaltungs GmbH: BVVG) was unclear and partly on sale in the real estate market (BUND 15.12.2010). Additionally, about a third of the German GB area owned by private owners and municipalities is still under no long-term conservation system. No comprehensive institutional framework for the German GB conservation exists despite significant institutional improvements regarding federal land.

Due to the absence of such a comprehensive institutional framework, it may be difficult to coordinate related multi-level institutions, particularly in the areas of the German GB under mixed ownership by the government, private owners and various organizations. The highly heterogeneous composition of land ownership and managing bodies often acts as a challenge to conservation of ecological connectivity, hindering the implementation of consistent and harmonious conservation measures.

Other institutional arrangements

Besides the National Natural Heritage, the German GB was also increasingly recognized and supported in relation to the other institutions. The German GB was included as a component of the national ecological network in the June 2009 amendment to the Federal Nature Conservation and Landscape Management Act (Article 21, Section 3)[47].

The German GB was included in a legal federal conservation act for the first time in almost 20 years after its creation. It can provide federal nature conservation authorities with more solid justification for strengthening institutional arrangements for the conservation and management of the entire German GB at the federal level.

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[47] The ecological network consists of core areas, linking areas and elements. The components of the ecological network are:
1. National Parks and National Natural Monuments;
2. Nature Conservation Areas, Natura 2000 Areas and Biosphere Reserves or parts of these areas;
3. Legally protected habitats in terms of reas
4. Other areas and elements, including those of National Natural Heritages, Green Belt as well as parts of the Landscape Protection Areas and Nature Parks, if they are appropriate for accomplishing the goals mentioned in Article 1.

Many recent institutional discussions are focused on the new protected area category of the National Natural Monument, based on the view that the new category is suitable for the natural as well as cultural and historical values of the German GB. The first proposal to designate the German GB as a National Natural Monument came in 2009 from the then Minister of the BMU, Sigmar Gabriel, who appealed to the Länder, which were responsible for its designation (BMU 20.08.2009). The proposal was highly welcomed and supported by environmental NGOs involved in GB conservation, such as the BUND. Its designation as a National Natural Monument was also urged at the event celebrating the 20th anniversary of the German GB held on 13 December 2009 in Hof, Germany (BUND 15.12.2010). At the Länder level, discussions on possible designations have already started in Thuringia[48].

The current discussions on the designation of the German GB as the National Natural Monument show that the historical and cultural value of the German GB is better appreciated by relevant actors than in Phase 1 before. The designation of National Natural Monuments in the German GB under the responsibility of the Länder may not only reinforce conservation of the GB but also contribute to promoting the bioregional approach integrating ecological, historical and cultural elements of the GB. However, the feasibility of the designation needs to be more substantially examined and discussed, since the designation of protected areas generally involves various interests among relevant actors, demanding a process of considerable negotiations and compromises.

5.4. Summary of the chapter

This chapter has examined the evolution of the institutional framework of the German GB from its creation in 1989 to the present in three phases. The main features of each of the three phases are presented briefly at the beginning of each section of this chapter. The former inter-German border was the off-limit areas, where human access, farming and industry were not allowed as a part of the former Iron Curtain. However, for this reason, nature could flourish, and the German GB was initiated to conserve the resulting unique, invaluable ecosystems in 1989. In the table below are listed in chronological order the major institutional changes and related incidents of the German GB since its creation.

[48] It was proposed by the State Parliamentary Party Alliance 90/The Greens in Thuringia in February 2011. Political discussions have been ongoing regarding the designation of the National Natural Monument in the Thuringia GB (Grüne Landtagsfraktion Thüringen).

Table 5.2: Main institutions and incidents relating to the German Green Belt

	Time	Main Institutions and related incidents
PHASE 1	9 December 1989	• Creation of the German GB project with initiative of NGOs
	April 1996	• Legal protection of the German GB in Saxony
PHASE 2	July 1996	• Enactment of the Borderland Law (Start of the privatization of the federal land in the German GB)
	1998	• Establishment of the German GB strategy and guidelines in Thuringia
	October 2000	• Commencement of the land purchase by the NGOs
	2001–2002	• First comprehensive survey on habitat types of the entire German GB
	September 2004	• Launch of the European GB initiative
PHASE 3	November 2005	• Coalition agreement of governing parties on the National Natural Heritage (Stop of the land sale and start of negotiations on the federal land transfer to the Länder)
	2007–2010	• First nationwide project Experience Green Belt
	November 2008-February 2011	• Agreements on the land transfer between the federal government and the six Länder
	June 2009	• Inclusion of the German GB as a national ecological network in the Federal Nature Conservation and Landscape Management Act

Right after German reunification, environmental policy was generally moved to the margins and no institutions relating to the nature of the former inter-German border were created at the federal level. Conservation framework for the area was first developed by NGOs and a few Länder. At the local level, due to the issues of unclear ownership and absence of administrative authority, habitat degradation occurred through intensive farming and other activities.

With the growing controversy over land ownership of the former border areas, the federal government allowed the almost exclusively federally owned borderland, including the German GB, to be privatized, posing a significant threat to German GB conservation. In the early 2000s, the external socio-political policy became more favourable for environmental policy, and institutional solutions to secure the permanent conservation of large parts of the GB land were achieved recently through negotiations between the federal and Länder governments under the framework of the National Natural Heritage.

Despite big steps forward through the National Natural Heritage, the land transferred to the Länder corresponds to about 40% of the German GB area. Other parts of the German GB are under different institutional arrangements and land ownerships. The highly heterogeneous land

ownerships and relevant institutions bring up a major governance challenge of how to build an institutional framework that can address the conservation issues of the entire German GB across an array of administrative units, embracing a wide range of actors and coordinating the multi-level institutions in the large-scale socio-ecological system of the German GB.

6. Key Actors of the German Green Belt

Following the examination of the institutional framework in the previous chapter, Chapter 6 examines the actors of the German GB in the process of governance analysis and responds to the second research question: "Who are the key actors of the German GB and how are they related to each other?" In understanding the governance system of the German GB, it is vital to identify the key actors and assess their respective interests and roles in the system as well as their relationships to each other, since governance focuses on the interactions of actors. Institutional practices such as legal regulations can only realize the intentions of institutions through actors' behaviour; they cannot directly impact the system.

Actors are defined as all relevant social units possessing agency or power of action in a policy process and are mostly collective actors such as governments, associations, NGOs, local populations, etc. The governance of a socio-ecological system such as the German GB is embedded in broader social and political contexts and the actors within are dependent upon their interactions and compatibility within the decision-making process. Therefore, it is necessary to solicit the involvement of a broader constituency than just the governing bodies (Abrams 2003: 27).

Once the key actors who affect or determine a policy issue or problem are identified, it is essential to determine their interests, concerns, roles, power resources and other relevant characteristics (Nuissl, Heinrichs 2011: 53). The actors' interests can be overt or hidden, and each actor usually has several interests. Next, how the actors interact should be examined by identifying the major relationships between them in the decision-making process.

6.1. Identification of key actors

As a nationwide ecological network, the German GB involves various actors at different levels and with different interests in the German GB. As for administrative entities, actors include 9 Länder, 38 counties (Kreise) and 2 independent towns (Kreisfreie Städte) in addition to the federal government. Due to the different land use occurring in the German GB, many land users such as farmers and various local groups are also involved in German GB policymaking.

In general, responsibilities for nature conservation in Germany are shared between the federal government, individual Länder and municipalities. Since Germany is a member of the EU, the supranational authority affects German national policies as well (Engel, Zimmermann 2007: 182; UBA n.d.: 13), and in contrast to most international organizations the EU has rather wide-

spanning regulatory powers. The public sector takes legal responsibilities for the protection and use of habitats in and around the German GB.

As found in the evolution of the institutional framework (see Chapter 5), the role of environmental NGOs is distinctive in the German GB governance. The NGOs not only initially created the conservation framework of the former inter-German border by beginning the German GB project, but have also influenced or participated in the government's policymaking either as a critic or a partner. Besides, local communities, whose members reside in, use the natural resources of, or own the land in and around the German GB influence decision-making at the local level, and they are also directly affected by relevant policies.

On the other hand, other agents, such as the private sector, the media and the academic and scientific communities, who are sometimes regarded as actors of environmental policymaking, are estimated not to have made significant impacts on the German GB governance, although they may be somehow involved in the activities of the public sector and environmental NGOs. For instance, the media helps to link the different actors by carrying information from one to another, and thereby can play a significant role in the accountability and perceptions of public policy in democratized countries (Edger et al. 2006: 4). However, the power of the media was not so significant as to influence the actors' perceptions regarding the German GB governance. A survey result showing very low awareness of the German GB from both the general public and the local people (see Section 6.1.3) supports this opinion.

Noting the historical significance of the German GB, it could be presumed that the historical sector also plays a large role. In fact, collaboration between sectors of nature conservation and monument protection has been very weak. If many historical monuments from the former border such as watchtowers still remained, and the historical value of such remnants were more available for use in the projects of the German GB, the role of the historical sector might have been more influential.

Consequently, based on interview results and the literature review as well as researcher observation, the key actor groups of the German GB are identified as the public sector (federal, Länder and local governments), environmental NGOs and local communities, as shown in Table 6.1.

Table 6.1: Key actors of the governance system of the German Green Belt

Actor Groups		Key actors
Public sector	Federal governments	Federal Ministries and agencies responsible for nature conservation, finance, transport, etc. (e.g. BMU, BMF)
	Länder governments	5 New Länder (Saxony, Thuringia, Saxony-Anhalt, Brandenburg, Mecklenburg-Western Pomerania) and 4 Old Länder (Bavaria, Hesse, Lower-Saxony, Schleswig-Holstein)
	Local governments	38 counties (Kreise), 2 independent towns (Kreisfreie Städte), numerous municipalities (Gemeinde)
	Environmental NGOs	Federal/Länder/local organizations (e.g. BUND, NABU), private foundations
	Local communities	Local associations, land users, land owners

6.2. Interests and roles of key actors

6.2.1. Public sector

According to German federalism, the public sector is vertically divided into three levels: federal, Länder and local. Although the Länder vary in authoritative structure, counties (Kreise) and independent towns (Kreisfreie Städte) usually fall under Länder administration. Counties consist of municipalities (Gemeinde), which are the smallest administrative unit and have their own administrations. Some major county towns (Kreisstädte) are included in the county level. Larger Länder such as Bavaria have districts (Regierungsbezirke) as intermediary authorities between Länder and lower levels (UBA n.d.: 26).

The Länder generally play a main role in the administration of environmental policies. In the nature conservation and landscape management (Pflege) sectors, the Länder can develop their own specific legislation, such as the designation of the main types of protected areas (see Box 4.1), while the federal government was authorized only to issue framework laws. With the recent amendment of the federal conservation act in 2010, the federal government can now create nationally standardized nature conservation legislation and regulations (see Section 5.3.1).

Counties and towns have self-governing functions, that is, the autonomy for the solution of local problems, as long as they do not conflict with federal or Länder regulations. In relation to nature conservation, many districts and counties can designate small-scale protected areas such as Natural Monuments (Flächennaturdenkmale), Conserved Landscape Elements (Geschützte Landschaftbestandteil) and occasionally NSGs.

Federal governments

At the federal level, the BMU is a main authority in charge of nature conservation. Other federal Ministries, such as the BMF and Federal Ministry of Transport, Building and Urban Development (BMVBS), have some environmental responsibilities and can directly or indirectly influence the conservation and management of the German GB.

In a 2003 conference on the German GB organized by the BMU and BfN, the roles of the federal government in the German GB were presented to support the conservation and development of areas of national importance, particularly by funding related projects as well as to extend and develop the concept of the GB in the other concerned European countries (Engels et al. 2004: 94).

The BfN, which provides technical, scientific and administrative support to the BMU in the area of nature conservation, takes a prominent responsibility for the GB and supports GB-related projects of other actors (Interviewee 4, 2008). The interest of the BMU and BfN is oriented mainly towards protecting valuable habitats in and around the German GB as well as maintaining and improving its function as a national ecological network. They also find an additional significance of the German GB in advancing the effectuation of the federal government's conservation commitment to the EU.

The federal environmental government did not take initiatives to play the expected role for GB conservation in the early post-reunification period. Interviewees from NGOs expressed their regrets on the late or insufficient initiatives of the federal environmental authorities in the early stages of the German GB development. Criticism also emerged in that the BMU did not have enough influence on the BMF during the negotiation process of the federal land transfers. In this regard, it needs to be noted that the environmental ministry is a rather weak one in Germany (Engel, Zimmermann 2007: 184) as in many other countries; in the 1990s, when the policy priorities were geared toward economic problems of the unified country, the importance of the environment was relegated even further.

The main role of the BfN, a main actor at the federal level, is to support projects which are implemented by other actors such as Länder, local administrations and NGOs. Its responsibilities are mainly policy development, public relations and funding rather than direct field implementation of policies; the implementation of nature conservation policies are the role of Länder. Although there are no direct grants from the federal government to the Länder, funding is available in the form of project support (Interviewee 4, 2008).

So far, many German GB projects and meetings have been orchestrated with financial support

from the BMU via the BfN under the project frameworks of the test-development project (Erhobungs- und Entwicklungs-vorhaben: E+E-Vorhaben) and the large-scale nature conservation project (Naturschutzgroßprojekt). The projects contribute to achieving conservation aims as well as bringing considerable opportunities for exchange and cooperation between different actors such as Länder, local governments, local communities, environmental NGOs, scientific institutions and others.

The framework of the test-development project focuses on developing new ideas and measures for nature conservation and does not necessarily involve Länder as organizations responsible for implementing or financing projects. The projects usually include the significant work of public relations. Two German GB projects under this framework such as Inventory of the Green Belt (Bestandsaufnahme Grünes Band, 2001-2002) and Experience Green Belt (Erlebnis Grünes Band, 2007-2010) were carried out by the initiative of related NGOs, representatively the BUND.

Another framework of the large-scale nature conservation project is co-financed by the related Länder and local governments and operates on a long-term basis, usually for 10 years. The funds are used for land purchases, long-tem leases, compensation, socio-economic surveys, etc. (BfN 2009: 3). One of significant project outcomes is the designation of protected areas by the Länder (Interviewee 4, 2008). With the first project on the landscape of the Schaalesee Lake (Schaalseelandschaft) on the border between Schleswig-Holstein and Mecklenburg-Western Pomerania starting in 1992, several projects have been in operation in the following sites: Lenzener Elbtalaue Floodplain in Brandenburg since 2002, Drömling Landscape in Lower Saxony and Saxony-Anhalt since 2002, Green Belt Eichsfeld-Werratal in Lower Saxony, Thuringia and Hesse since 2009, Green Belt Rodachtal-Lange Berge-Steinachtal in Bavaria and Thuringia since 2010 (Terry et al. 2006; BfN 2009; BfN 2010; BMU 24.06.2010).

In addition to the federal environmental authorities, the BMF and some federal politicians have also influenced the policymaking of the German GB at the federal level. As examined in Section 5.3.2, the BMF was powerful in the German GB governance based on its land tenure until the federal land in the GB was transferred to the Länder. The ministry's main interest in the German GB was to raise revenue and make an appropriation for the development of the New Länder from the revenue, conflicting with the BMU's interest in nature conservation and environmental NGOs (Interviewee 16, 2008). By the time of the transfer of federal land to the Länder, the role of the BMF became weak in the German GB governance.

The role of federal politicians has also been influential, particularly in establishing the legal

instruments influential to the German GB (e.g. National Natural Heritage) and approving the necessary funds for the projects (e.g. Experience Green Belt) (Interviewee 2, 2008; Interviewee 16, 2008). Although some members of the German Bundestag (Lower House of Parliament), Chancellor and the President often made political statements[49] supporting the concept of the GB, most of these statements remained mere talk and were not realized into policy until the early 2000s (Interviewee 2, 2008; Interviewee 3, 2008). Politicians from the German Green Party (Alliance 90/The Greens) or the German GB regions are particularly supportive of the German GB and also the European GB. Opinions regarding the conservation needs of the German GB among different political parties have mostly avoided conflict, and a general consensus on the value of the nature and history of the German GB can be found among federal politicians regardless of their parties (Interviewee 2, 2008; Interviewee 3, 2008; Interviewee 4, 2008).

Länder governments

The German GB is located between five New Länder and four Old Länder. The Länder have legislative power in the area of nature conservation, such as the designation of main types of protected areas, in addition to the general responsibility of licensing, monitoring and enforcing relevant policies (Engel, Zimmermann 2007: 186); UBA n.d.: 13). Yet, until recently, the influence of the Länder was restricted in German GB conservation and some Länder did not have much interest in it. As the Länder took over most of the federal land in the late 2000s, they could exert their authority in about 40% of the GB area. Thus, the Länder became more powerful in the German GB governance.

Since the Länder have legislative power in nature conservation and landscape management (Pflege) and are responsible for the enforcement of environmental policies, they can create and operate institutional frameworks to conserve and manage the valuable habitats of the German GB, for instance, the 32 focal and development areas of high value in need of action along the German GB, which were identified by the 2001-2002 habitat type survey (see Map 4.2). The Länder can plan and carry out the necessary conservation measures, such as landscape management (Pflege) and land purchases, in the areas deemed to be in cooperation with other federal and local actors (BUND 2002a). In particular, the authority to designate and manage the main types of protected areas (e.g. NSGs, National Parks, Natural Parks, Biosphere Reserves,

[49] The BUND compiled the political statements relating to the German GB from 1990. They can be found from BUND (2011).

National Natural Monuments) is one of the key governance tools at their disposal.

The environmental administrations of German Länder are characterized by two or three vertically structured levels of authorities: ministries, lower authorities and/or intermediate authorities. As the supreme authorities of the Länder, the environmental ministries are responsible for the development and implementation of environmental laws and the distribution of funds for environmental protection (UBA n.d.: 23). Many environmental ministries of Länder share the mandate of agriculture and nature conservation with their respective subordinate authorities (Müller 2009: 3) (e.g. Thuringia Ministry of Agriculture, Forestry, Environment and Nature Conservation (TMLFUN), Saxony Ministry of Environment and Agriculture). Within the integrated structure, the traditionally more powerful agriculture sector can weaken the interests of nature conservation; on the other hand, it can have a positive effect on nature conservation through cross-sectoral policies, as exemplified in the case of farmland reform (Flurneuordnung) in Thuringia, which was described in Section 5.1.2.

The supreme nature conservation authorities (Höhere Naturschutzbehörden) of the Länder environmental ministries are responsible for the large-scale conservation areas (e.g. National Parks, Biosphere Reserves, Nature Parks) and the recently established National Natural Monument. In and around the German GB there are 1 National Park, 3 Biosphere Reserves and 11 Nature Parks. The administrations of the protected areas generally have interests in nature conservation, landscape management (Pflege), tourism, etc., although their specific interests and roles differ according to the purposes and management issues of each conservation area. Thuringia is involved in the greatest number of large-scale conservation areas in the German GB: Harz National Park, Rhön Biosphere Reserve, Werratal-Hainrich-Eichsfeld Nature Park, Schiefergebirge - Obere Saale Nature Park and Thüringerwald Nature Park.

The administrations responsible for the conservation areas are among the key partners of German GB conservation policymaking and implementation at the Länder level. The Werratal-Hainrich-Eichsfeld Nature Park, of which 95 km is part of the German GB, is one of these examples. The Nature Park administration, which has participated two large-scale German GB projects, Experience Green Belt and Green Belt Eichsfeld-Werratal, has been involved in relevant decision-making processes based on its duties and capacity as a Nature Park management organization, such as landscape management (Pflege) in cooperation with farmers, promotion of regional development through rural tourism, environmental education and networking with local partners (Pönicke 2006: 24).

Although all 9 related Länder governments acknowledge the natural and historical importance

of the German GB, the degree of interest and commitment differs from federal state to federal state. Most interviewees shared the view that Thuringia was the most committed federal state government in the German GB conservation and that its influence on the German GB governance was increasing. The Länder of Brandenburg, Mecklenburg-Western Pomeraria and Saxony-Anhalt are regarded as less supportive.

As explained in Section 5.1.2, the State of Thuringia established in 1998 a strategy for GB conservation based on the principle of sustainability. It was thus far the only official policy guideline that was made exclusively for the German GB at the Länder level until the major institutional arrangements with the take-over of the federal land in late 2000s. The strategy was carried out by many practical policies and local projects, particularly in connection to farmland reform (Flurneuordnung). The Thuringia Ministry of Agriculture, Forestry, Environment and Nature Conservation (TMLFUN) mainly coordinates and implements the GB-related projects. For the effective administration of the large territory of Thuringia, three regional (intermediary-level) agencies for farmland reform (Ämter für Landentwicklung und Flurneurodnung) have been established in Gera, Gotha and Meiningen under the TMLFUN. They enforce the policies and projects of GB conservation and management in cooperation with other actors including local NGOs and neighbouring Länder.

Several interviewees commented on the reasons for Thuringia's positive GB policies. First of all, Thuringia is home to the longest section (763 km) of the German GB, which is 55% of its whole length, and, therefore, it is bound to have significant influence on the conservation and management of the entire German GB. Additionally, many positive actors at the local level such as counties, foundations and NGOs are powerful partners of federal-level GB policies. The socio-cultural factor of relatively high interest and pride in the history and nature of the federal state among the general population may have contributed to the better acceptance of the GB concept and activities. Among others, the personal interest and enthusiasm of political leaders regarding the German GB, e.g. the Prime Minister or the Environmental Minister of Thuringia, was pointed out as very influential. However, this meant that the development of German GB policy gained insufficient support during the service of leaders who were less interested in the German GB (Interviewee 4, 2008; Interviewee 11, 2008; Interviewee 12, 2008; Interviewee 14, 2008; Interviewee 15, 2009; Interviewee 16, 2009).

It is not only the New Länder that have interests and play significant roles in the nature conservation of the German GB. The State of Bavaria, which borders Thuringia and Saxony along the German GB, has also been supportive of GB conservation and provided financial support for related projects even before the creation of the German GB. In fact, nature does not

recognize political borders, whether it is the former inter-German border or the present state border between New and Old Länder along the German GB. Valuable habitats are located not only in the German GB but also in surrounding areas. The commitment of the Bavarian government to the German GB is, therefore, inspiring and highly desirable.

A local expert in Bavaria who has long been involved in the German GB projects explained the background of Bavaria's involvement in a more concrete way:

> The first ecological mapping [an ornithological survey in 1975] of the former inter-German border was carried out not only on the border but also up to 50-100m away from the border on the Bavaria side. […] Rivers or streams often flow along the border between Bavaria and Thuringia; therefore, it would be, of course, nonsense, if one considers only the Thuringia side and not the Bavaria side. In many cases the Bavaria side is also very valuable, and over the years a great many transborder protected areas or the protected areas located in Bavaria border Thuringia (Interviewee 16, 2008, translated by the author).

In addition, the higher economic standard of Bavaria is perceived as one of the factors enabling its commitment to German GB conservation. Above all, the long and vigorous activities of the local conservation NGOs, including their lobbying of government, is also a very influential factor. It was environmental NGOs from Bavaria, such as the BN in Bavaria, which first paid attention to the natural value of the former inter-German border in the mid 1970s. They have been playing a key role not only in Bavaria and but also in the entire scope of the German GB and European GB projects.

Local governments

Local government's interest in and support of the German GB concept and projects are generally low. Many higher level authorities and local NGOs often experience a lack of interest or passive participation in German GB projects on the part of local authorities. The low local-level interest is estimated to be related to the general perception of many local governments that nature conservation measures, such as the designation of protected areas, can be obstacles to the regional development (Interviewee 7, 2008; Interviewee 8, 2008), "although they sometimes use protected areas for their policy publicity" (Interviewee 6, 2008). The recent reform to simplify the administration systems of some Länder (e.g. Saxony in 2008) may work more to disadvantage nature conservation at the local level by transferring the authority of designating the nature conservation areas to the lower-level nature conservation authorities from the intermediate-level nature conservation authorities (Interviewee 6, 2008).

The regional development is also a reason for the positive attitude toward the German GB

conservation of some counties and municipalities that are interested in the potential of regional development using the natural and historical resources of the German GB, such as touristic development. It implies that local governments can be more active when they can see and expect specific and clear benefits. In addition, they are influenced by local NGOs and local people who are enthusiastic to maintain the history, culture and nature of their areas (Interviewee 14, 2009). The possibility of increasing local-level interest in conjunction with regional development is supported by the statement of a regional official responsible for German GB policies about the motivation of the municipalities participating in a hiking trail development project in and around the GB:

> The municipalities recognized that the touristic development is for them. They always think about what they have for touristic potential and [some] municipalities recognized the GB as one site for potential. Information boards [on the hiking trails] provide information and references to make the visitors head toward the municipalities. Some mayors find it a very good opportunity, but many have not realized it yet (Interviewee 7, 2008, translated by the author).

Wartburg County in Thuringia, which contains the longest section of the German GB (196km), is one of the counties that are very receptive to the GB projects (Interviewee 8, 2008). An official responsible for the regional development in the country stated that, until around 1996, when German GB-related polices were aimed only at nature conservation, they could not obtain the enough support from the majority of regional government. The District Office (Landratsamt) became supportive of the GB conservation policy, since the policy was not confined to nature conservation but connected to other regional development purposes, such as soft tourism (e.g. hiking) and landscape management (Pflege) (Interviewee 15, 2009).

Figure 6.1: Information boards on a hiking trail of the German Green Belt

(Photo taken by the author during the field visit on 3 June 2009 at Ulstersack Nature Conservation Area on the border hiking trail in the Wartburg Region, Thuringia)

The modification of GB policy strategies to integrate nature conservation with other purposes occurred through the local government authority of

Wartburg County's attention to the potential synergy effect between the historical and natural values of the German GB in the mid-1990s with the establishment of the Memorial Point Alpha in Geisa[50]. The memorial is now a popular tourist destination located in the German GB at the southern part of the country. A plan of a GB hiking trail (Grenzwanderweg in der Wartburgregion)[51] was inspired by the memorial construction to promote the visit to the memorial by connecting it with other touring spots through a trail. The GB hiking trail has strong elements of historical education on the modern German history of national division and reunification as well as of the natural values of the GB (Wartburgkreis 2010; Interviewee15, 2009).

In general, the municipalities and counties are partly based on the right of self-government and they can decide autonomously if and how they want to operate. Particularly regarding the German GB, local administrations are responsible for the designation of suitable protected areas and the proper management of habitats in need of maintenance. The protected areas they can designate are smaller and have less strict restrictions, such as Natural Monuments (Naturdenkmäler) and Conserved Landscape Elements (Geschützte Landschaftbestandteile). In some cases, NSGs can be also designated by the lower-level nature conservation authorities, not only at the Länder level.

Concerning habitat management, some habitat types like neglected grasslands (Magerrasen), heaths (Heiden) and hedges (Hecken), which need human intervention for maintenance, are of particular concern. If they are left in the process of natural succession, scrub encroachment and forestation will take place, leading to the disappearance of these original habitats. Therefore, from the point of view of many conservationists, proper management measures are desired at the local government level in those habitats to prevent grasslands and heaths from gradual growing (BUND 2002a: 57). Extensive sheep grazing is one of the examples of landscape management (Pflege), which is now seldom operated in the German GB areas due to the reduced financial support from government. Habitat management activities cannot be implemented without the close cooperation of local land users, various local associations and environmental NGOs.

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[50] Point Alpha was a former US Army observation post. It is now one of well-known memorial sites that keep the border installations of the GDR era with a museum of the suffering of East Germans in the restricted zone under the GDR border regime. The official website is http://www.pointalpha.com/.

[51]. The trail course of the Wartburg region is one of the three sections of the border hiking trail of Thuringia. It includes 31 stop sites with information boards (see Figure 6.1), such as the Memorial Point Alpha.

6.2.2. Environmental NGOs

Environmental NGOs, also called civil society organizations, have played a pivotal role in initiating and developing the German GB initiative as well as in relevant policymaking processes. Interviewees from all levels of governmental authority did not hesitate to name environmental NGOs as one of their key partners in GB-related policies and projects. In addition, NGOs have made an impact on the German GB policymaking by lobbying policymakers, and have often made coalitions with each other in conflict situations with other actors.

In general, NGOs in environmental governance play the role of keeping in check environmental policies and other actors' compliance to them as well as influencing the actions of policymakers and other actors through lobbying, confrontation and providing information to the target public (Engel, Zimmermann 2007: 188). In addition, the environmental NGOs of the German GB have played a prominent role in GB policy development by providing technical advice as well as protecting and managing parts of valuable habitats in the form of private protected areas.

The primary interest of the environmental NGOs is to ensure the conservation of all valuable GB areas as a unified ecological network by conserving valuable habitats as core areas and 'filling' gaps between fragmented habitats. Broadly speaking, the NGOs have considered two issues as great obstacles to this goal of conservation. One was the issue of federally owned land on sale to the private sector without properly instituted conservation practices, and the other issue was the persistence of private land threatening habitats by intensive land use.

Concerning the necessary formal institutional arrangements for German GB conservation, there are somewhat differing opinions among NGOs and NGO staff. Some interviewed NGO staff members did not consider protected area designation as indispensable. However, many NGO actors believed that the entire German GB should be under different but comprehensive protected area systems like the system in Saxony, so that construction projects or intensive land use can be prevented. The recently established National Natural Monument system is proposed as a potential solution by many:

> The GB is predestined to be included in the new protected category [National Natural Monument] by reason of its national nature conservational value and historical significance. A connected ecological network and its function as historical memorial landscape (Erinnerungslandschaft) can thereby be

> permanently guaranteed (translated by the author)[52].

The two national environmental NGOs, BUND and NABU, are most committed to and active in German GB conservation. First, the BUND, one of Germany's largest environmental NGOs, is one of the key actors at the centre of the German GB governance. The federal office, Länder branches, and local groups impact policy development by lobbying and public relations work at each actor level. In particular, its Bavaria branch, BN in Bayern, a key founding organization of the German GB, plays an essential role in providing expertise and building coalitions with other NGOs and conservationists. The GB Project Office was separately established in 1998 within the BN in Nurnberg; two full-time staff members coordinate the German GB activities of the BUND as well as of the central European region of the European GB.

The federal office of the BUND in Berlin focuses on fundraising and public relations work, also utilizing the two full-time staff members for the German GB project. With donations from over 10,000 citizens through the Green Share programme (see Section 5.3.2), the BUND succeeded in purchasing around 550ha of private land for habitat conservation[53]. The habitats are conserved and managed as private protected areas with the help of the BUND local groups and other local communities.

The role of the BUND is usually assessed positively by other actors, including government actors, as exemplified by the following statement:

> For the GB, the BUND has taken a leading role for the nature conservation and the sustainable regional development in the former border area since the fall of Berlin Wall. Without the citizens' commitment, conservation of the GB would have been hardly possible (Bundesministerium für Umwelt 30.04.2009).

While the BUND is active in German GB conservation in most of the related Länder, the NABU[54] is strong in the State of Saxony, in particular the Elstertal region in Vogtland County, where all of the GB area has been legally protected since 1996. The committed NABU members, who also worked at regional environmental authorities (then Staatliches Umweltfachamt Plauen), played a central role in the policymaking process by connecting and harmonizing the

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[52] Resolution of the anniversary ceremony of the 20th anniversary of the German GB organized by the BUND on 13 December 2009 in Hof, Germany

[53] Information accurate as of February 2011

[54] NABU (Naturschutzverbund Deutschland) is one of the largest national NGOs in Germany with around 460,000 members and supporters from 1,500 counties and local groups. It focuses especially on the nature conservation of rivers, forests and animal species (NABU 2011).

different interests and positions of various NGOs and governments.

The NABU in Saxony has focused on the following topics relating to the German GB: the purchase of private land, inclusion in the Natura 2000 sites, landscape management, public relations, and protests against construction projects destructive to GB habitats. One of the representative achievements of the NABU in Saxony is concerned with the construction of highway No. 93 between Salle and Weißer Elster, which was supposed to cross the German GB in 12 locations. However, it came to detour away from the German GB following strong protests by environmental NGOs such as NABU and BUND in 2003. The NABU has a close cooperative relationship with the BUND, particularly with the GB Project Office and BUND local groups, as well as with local authorities (Interviewee 6, 2008; NABU Sachsen 2011).

Besides these large environmental NGOs, private environmental foundations (e.g. Heinz Sielmann Stiftung[55], Naturstiftung David[56]) are also involved in German GB policymaking and projects. The foundations usually support land purchases and conservation projects. For instance, the Heinz Sielmann Stiftung has been participating in a large-scale nature conservation project, Green Belt Eichsfeld-Werratal, started in 2009, as a co-funding and project-executing organization in cooperation with the federal and Länder governments (Interviewee 13, 2008).

Factors allowing NGOs to have the power of influence in the German GB governance are not just based on their early initiatives for the creation of the German GB. The BUND has more than 480,000 members and supporters nationwide, and approximately 2,000 county or local groups are organized under the 16 regional sections (BUND 2011). The organizational structure of numerous members and local groups provides the power for lobbying the government as well as obtaining public support. Additionally, the NGOs have significant technical knowledge on nature conservation and local information on the German GB. When they argue using scientific data on the species in the GB habitats that are extinct elsewhere, the government cannot ignore them and many people pay attention (Interviewee 3, 2008).

Another power factor lies in the relatively flexible and non-bureaucratic organizational structure and culture of the NGOs, which allow for more efficient networking and cooperation across Länder or counties, in contrast to the relationships among various government actors. The

[55] The Heinz Sielmann Stiftung was founded in 1994 by Heinz Sielmann, a zoologist and documentary filmmaker, and his wife Inge Sielmann to promote the principle of nature conservation as a positive life philosophy. In the mid-1990s, it began projects to conserve valuable landscapes in the German GB. (Heinz Sielmann Stiftung 2011; Information material obtained during the interview with Interviewee 13).

[56] Naturstiftung David, which was founded in 1998 by the BUND Thuringia Branch, supports the projects for conservation of nature and environment in the New Länder (Naturstiftung David 2011).

coalitions of different NGOs such as the BUND and NABU often take place for common conservation issues at the local level. In addition, the local groups of national NGOs collaborate more often and efficiently than government administrations do across Länder and counties, like the following example of the BUND local groups around the Salzwedel area:

> Until recently, there has [generally] been little cross-border cooperation. […] With the operation of the project [Experience the Green Belt], it has been a bit changing. I think we are going in the right direction. For example, it worked out very well for many years that we [BUND local group in Salzwedel] operated the nature conservation measures across the border with the BUND groups in the [neighbouring] State of Lower-Saxony, because the ecosystem was on both sides of the federal state border (Interviewee 19, 2008).

6.2.3. Local communities

In the actor group of local communities, the general attitude of local people toward German GB conservation is examined, and the interests and roles of local associations and land owners involved in the German GB governance as collective actors are examined in more detail.

Attitude of local people toward the German GB

Right after the fall of the Berlin Wall, many Germans, including the local people near the border, wanted to remove the remains of the border to forget the nation's tragic past (Interviewee 19, 2008). The people living in the border areas were affected most directly by the border situation, resulting in consequences such as the loss of relatives, houses, farmland and free movement. Therefore, most border installations were quickly removed (see Section 5.1.1). Some local people were also critical of the ideas and initiatives for nature conservation in the former border area, considering attempts to designate protected areas as building 'green borders' or 'green fences' following the former inter-German border, and even enforcing the second dispossession of land (zweite Enteignung) (Interviewee 2, 2008; Interviewee 3, 2008; Interviewee 4, 2008). However, the opposition seemed to be partly owing to the general attitude against nature conservation - especially the designation of protected areas - rather than opposition specifically against the German GB (Becker 2004: 69). The general negative attitude toward nature conservation can also be explained in relation to the historical experiences of the local people. Many residents who experienced severe repression in the former GDR era placed high importance on freedom and became very sensitive towards further restrictions (Stoll-Kleemann 2001: 8).

After around a decade, more and more local people began to regret the absence of historical monuments in the border area, which may be very useful in attracting tourists or educating

students on national history. They also came to regard the 'green border' as special (Interviewee 2, 2008; Interviewee 3, 2008; Interviewee 4, 2008; Interviewee 17, 2008). An interviewed government official explained the attitude change of the local people, particularly farmers:

> Since around 15 years ago, a prevailing opinion at the early period [after the GB creation] to remove the nature in the GB and to farm there has disappeared. The farmers also had the perception that there are strips of land where they cannot plow or they can do only limited sheep farming or the like (Interviewee 7, 2008).

As the local perception on the German GB has been changing positively, some local governments as well as local NGOs have initiated small local-level projects in the GB. The interviewees who were responsible for those projects stated that acceptance of the concept of the GB and cooperation of the local communities varied from site to site, and their attitudes were often strongly affected by local politicians or leaders.

Local awareness on the concept or the name of the German GB is still very low. This was pointed out not only by interviewees, but also revealed through a poll carried out in 2007 as a part of the project Experience Green Belt (see Figure 6.2).

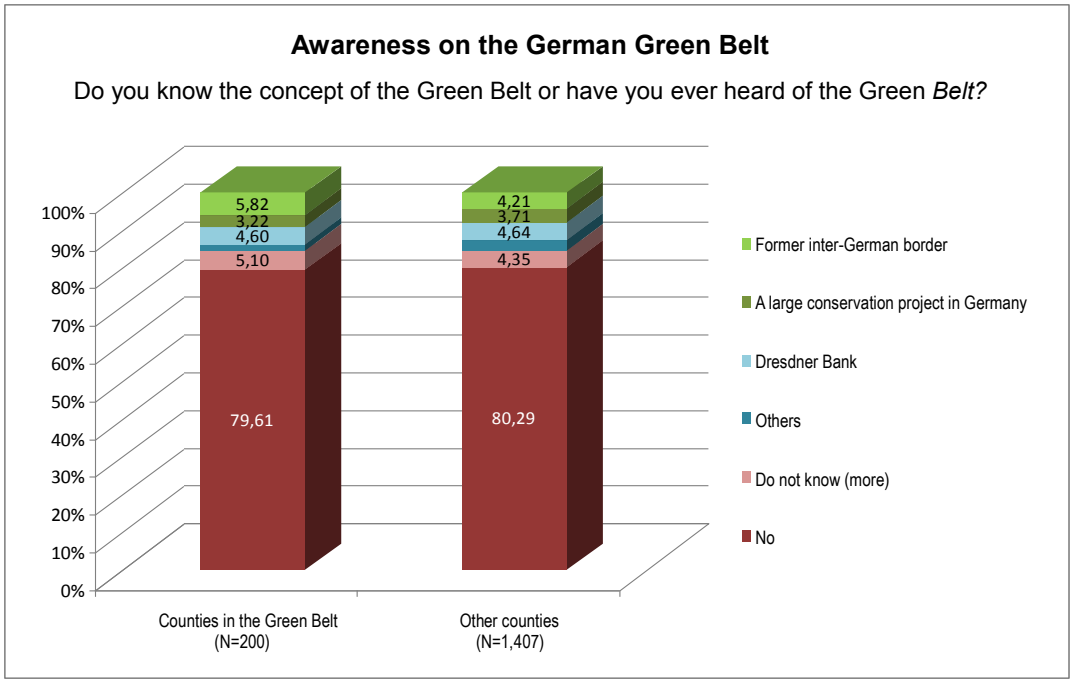

Figure 6.2: Awareness on the German Green Belt of the local people and the public

(Source: Document provided by the BN, translated by the author)

Surprisingly, the poll[57] showed that, when asked what the Green Belt was, only 5.82% of 200 respondents living in counties in the German GB answered that it was the former inter-German border; 3.22% responded that it was a large nature conservation project in Germany. People living outside of former border areas (1,407 respondents) showed similar levels of awareness[58].

However, it is estimated that awareness of the German GB has since improved, as the German GB became one of the most popular subjects frequently covered in the media around 2009, on the occasion of the 20th anniversary of the fall of the Berlin Wall. In addition, various events and small projects were carried out in the three model regions as part of the project Experience Green Belt (2007-2010) for the purpose of the local and public awareness of the German GB through developing sustainable regional development.

Local associations and land owners

The interests and roles of local associations and land owners are directly connected to the conservation and development of the German GB. These actors thereby have an impact on the processes of decision-making and policy implementation. Many small local associations (or groups) for various land use or other common causes are organized in many counties and municipalities. The associations of landscape management (e.g. shepherds), nature protection (e.g. Friends of Orchids, Friends of Birds), forestry, farming, hunting, hiking trails, tourism and recreation are primarily concerned with the GB. Since the members of these associations are usually the users of land and natural resources, they make a large impact on habitats in the German GB through their practices.

They are the key partners of local and Länder governments and environmental NGOs. Their knowledge and experiences on the local nature, landscapes, culture and history are very useful, for projects related to grassland management (Pflege), creation of hiking trails, development of tour programmes and more. Some local groups run their own projects in the German GB. Their capacity is, however, usually limited because they have to rely solely on voluntary work (Interviewee 10, 2008). The degree of their participation and cooperation in GB projects varies in different localities and issues.

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[57] The poll result prepared for the workshop presentation was obtained during the interview with the interviewee 1.

[58] One of frequent answers of the poll was Dresdner Bank. The bank, which has now merged to the Commerzbank in Germany, has supported a project for youth sports having the same title of *das Grüne Band*.

Figure 6.3: A shepherd and his sheep in the German Green Belt
(Photos taken by the author at Hasenreuth Nature Conservation Area, Vogtland in Saxony, 11.08. 2009)[59]

Local private land owners have more direct interests in and influence on the German GB governance than local associations. Around a third of the German GB area is estimated to be private land. The land tenure is one of the key power factors in biodiversity conservation and nature resource management. Private land owners in the German GB have an impact on decision-making processes based on their property rights as well as on habitat conservation through their decisions on how to use their land.

Much of the German GB land is composed of plots owned by different kinds of land owners (e.g. federal, Länder, municipalities, private, NGOs), which can increase habitat fragmentation. In addition, the highly split land ownership in some areas often makes policymaking more complicated and difficult due to the involvement of many different actors. The German GB hiking trail project in Wartburg County, Thuringia (see Section 6.1.1) encountered the problem of cooperation with private land owners. Along the planned trail course many private land owners who owned small plots of land were involved. Therefore, it took several years to discuss and negotiate an agreement on the creation of the trail, and some sections of the course had to be altered to detour outside of the GB (Interviewee 10, 2008; Interviewee 15, 2009).

[59] The shepherd, with whom the author had a conversation during the field visit to the German GB in Vogtland, Saxony, had around 600 sheep and several goats. He moved to the grasslands for grazing by a contract with the Saxony federal state government. Since no shepherds in Saxony continued the job after the reunification, shepherds from Bavaria, a bordering federal state, came to the grassland in Saxony for grazing. While shepherds pay the grassland owners for the grazing, they are also paid by the Länder and the EU for landscape management. Shepherding contributes also to increasing local awareness of the German GB (Interviewee 6, 2008).

Furthermore, there are also other factors to enlist the cooperation of land owners. Among the private land owners of small plots, some considered the layouts of and accessibility to their land plots inefficient for land uses such as farming or considered the soil quality inadequate for agriculture. Those land owners often do not have high expectations of the land value, which positively affects their cooperation with environmental NGOs (BN/BUND 2002: 59).

Salzwedel in north-eastern Saxony-Anhalt is one case that exemplifies such attitudes by land owners. The soil quality in this area is relatively poor, which contributed to maintenance of valuable habitats in the German GB without a big threat of intensive farming. The BUND local group in Salzwedel launched a land purchase project in 2000. They negotiated with and persuaded as many as 150 land owners in the German GB. After their laborious efforts, they succeeded in the purchase of around 300ha of lands (Interviewee 19, 2008), which is the largest area of the land purchased by the BUND as of 2010.

The local NGO staff responsible for the land purchases in Salzwedel identified that the motivation of the land owners who sold the land to the BUND seemed to be related to the economic benefits, although the land owners were also interested in German GB conservation to some extent. During the interview, he explained the motivation of the land owners as follows:

> Many land owners who sold their lands said that they thought the [GB] project was meaningful and they were willing to support it and sell their lands. […] However, it is also partly because they can earn more by selling the lands than they paid before when they got them back from the federal government, because we purchased the lands at the market price. […] They tried to earn money from the lands, but they could not do much with them. Therefore, they sold them [to us] for nature conservation (Interviewee 19, 2008, translated by the author).

6.3. Relationships between actors

This sub-chapter sheds light on the major relationships among the key actors of the German GB. Amidst converging or competing interests as well as the distribution of power between different actors, either partnerships or conflicts are formed. Partnership, which may be defined in many different ways, means here the collaboration between two or more actors in pursuit of common objectives based on a sustained commitment (Edgar et al. 2006: 7). Relationships can also be organized horizontally or vertically by the power elements (e.g. legal hierarchy, degree of informal influence), and the organization of relationships is particularly associated with the scale and level of governance of the system under consideration.

In the German GB, the relationships between the key actors were examined in the government's

decision-making processes over policies and the planning and implementation of related projects. The relationships are complex because they are created between different scales and levels and affected by the geo-ecological and socio-political features, which were described in Section 2.3. The following relationships are characteristic of the governance system of the German GB.

6.3.1. Partnership and cooperation

The public-NGO partnership has occasionally been established between environmental NGOs and nature conservation authorities based on their shared interest in the conservation of the GB. It is a general worldwide tendency that the role of NGOs in policymaking is increasingly recognized by government actors, and the cooperation between the two actor groups is growing. In the public-NGO partnership in the German GB, governments have usually contributed public funding, political will and support and the power to create and enforce regulations and policies. Environmental NGOs have contributed the ability to mobilize their organizational and informal networks and expertise on local nature as well as their commitment to community issues and concerns (Edgar et al. 2006: 7).

The public-NGO partnership is observed at all actor levels (federal, Länder and local), but it seems most stabilized at the federal level, as shown by the partnerships between the BMU/BfN and the BUND. The federal environmental ministry did not have much power in the German GB governance for long at the federal level, as explained in Section 6.1.1. Cooperation with environmental NGOs can be profitable in increasing the federal environmental government's power in the governance, and the NGOs' knowledge and horizontal and vertical networks are useful resources for the relevant projects and policy implementation.

At the local level, it is worthy to note the role of key individuals with 'double positions,' serving both as governmental officials and NGO members, in accomplishing policymaking and project implementation goals under the conflict situation. The effective roles of such individuals were observed in the protected area designation of the GB in Vogtland, Saxony, in the purchase of almost all private GB land in Salzwedel, Saxony-Anhalt and in the GB hiking trail development in Wartburg, Thuringia. Key individuals of these projects worked in the local authorities dealing with German GB policies and were simultaneously the members of NGOs (BUND, NABU). They could take advantage of the ability to arrange the interests, power and resources of both organizations. For example, these key individuals made use of the formal and informal networks and more flexible processes of NGOs in promoting official negotiations at the governmental

level (Interviewee 6, 2008). It was also notable that the interviewees who were in the 'double positions' had no particular difficulty in their duties in combining the two roles in the governmental authority and the environmental NGO.

The next notable feature relating to cooperation is that horizontal information exchange and collaboration are difficult to arrange, and it becomes harder at upper levels. Many actors of the German GB are from different regions and have different interests and responsibilities. Interviewees who implemented or were involved in German GB projects (e.g. tour programme development, hiking trail establishment) pointed out the problems caused by the absence of efficient horizontal networking within a federal state or between counties, mentioning the difficulties of information gathering and coordination of different interests (Interviewee 8, 2008; Interviewee 9, 2008; Interviewee 11, 2008). The problems are related to the severely decentralized administrative system of Germany in the present, which makes it difficult to create a systematic mechanism to operate proper information flow as well as to establish a high-level organization with the power to coordinate or control relevant policies. Most of the related policymaking and project implementation have required substantial coordination and frequent discussions mostly in round table formats.

Many interviewees agreed that the discussions and negotiations between Länder or between the federal government and Länder were more difficult and took more time than at the local level. An interviewee explained the problem using the example of the large-scale nature conservation project Green Belt Eichsfeld-Werratal:

> The 10-year project will be launched after around 5 years of preparation and coordination [between actors of the Länder of Thuringia, Lower Saxony and Hesse and the federal government]. But the land in the GB changes faster, like almost every half year. The local people complain that the project develops too slow (Interviewee 13, 2008, translated by the author).

At the Länder and federal levels, the discord between the policies and the legal institutions of the two levels and also between Länder is mostly the biggest obstacle to cooperation. However, at the local level, the discussions and compromises can happen relatively more efficiently, mainly because it is easier to build rapport and trust between actors at lower levels. The concerned interviewees emphasized the importance of the process of communication and negotiation, which contribute greatly to the compromise between actors with different interests and positions, referring to their experiences with the related local projects (Interviewee 16, 2008; Interviewee 7, 2008; Interviewee 8, 2008; Interviewee 19, 2008; Interviewee 11, 2008; Interviewee 15, 2009). Although conflicts may happen, they are not as severe or long-standing as those at the upper levels, and often are more easily negotiated through round table

discussions or with the help of informal communications.

6.3.2. Conflicts

Conflicts are situations of competition and potential disagreement between actor groups with different interests, and can be classified according to the level of the actors and their objectives (Grimble, Wellard 1997: 179). In this point of view, conflicts in the German GB governance are observed in the following actor relationships: between federal authorities with different policy objectives (e.g. BMU and BMF), between federal and Länder governments, between local environmental NGOs and federal and Länder governments, and between local actors. The latter three prominent conflicting relationships are examined here.

First, the conflicts between the federal and Länder authorities, which hamper vertical policy cooperation, are considered one of the general characteristics of German environmental governance. It is caused by the asymmetry in environmental policy competencies between the authorities within the decentralized system (Engel, Zimmermann 2007: 217). The Länder are in charge of specific legislation as well as policy implementation and enforcement, particularly in the policy areas of nature conservation and landscape management, while the competencies of the federal government are limited in this regard. In the German GB, the conflict between the federal and Länder government escalated in the process of the federal land transfer, with the National Natural Heritage as the main reason for incurred financial costs.

Second, the most severe conflicts in the German GB are observed between local environmental NGOs and the federal and Länder authorities over large-scale construction projects. This represents the conflict between interests in conservation versus development policy objectives. Local environmental NGOs and other concerned local groups have criticized that most of the roads and buildings in and across the German GB were built with no consideration of the ecological significance of the GB. Road construction has frequently initiated severe conflicts, since their harmful impacts on the GB habitats threaten the connectivity of the German GB ecological network. Local NGOs, in cooperation with concerned local communities, have protested and demonstrated against the construction, often resorting to collective claims.

A recent example of such a conflict is the plan for the three-lane federal motorway (B87n) construction project between Fulda in Hesse and Meiningen in Thuringia across the German GB in the Rhön Biosphere Reserve, including around 80 bridges, dikes and mountain clefts. A large campaign against the project has been ongoing since 2006 (BUND Thüringen 2008: 10; BUND, 2009: 3). In the case of the bridge construction plan in Wakenitz in Mecklenburg-West

Pommerania, a core area of the large-scale nature project of the conservation of the Lake Schaalsee Landscape, local BUND groups enacted formal proceedings against the construction in 2008 (BUND 2007; BUND 2008). The conflicts between environmental NGOs and government authorities are in general frequently intensified when environmental NGOs are excluded from close involvement in the policymaking process. Consequently, the NGOs rely more on court decisions during the post-decision phase (Engel, Zimmermann 2007: 188) as in the aforementioned examples.

Third, the conflicts between local-level actors occur multilaterally over issues of land use such as agriculture, forestry, tourism, nature conservation, and landscape management (Pflege). The demarcated and dispersed power and responsibilities across the different local authorities and associations often intensify the conflicts. Some interviewees described the conflict in the process of finalizing hiking trail courses along the border. While the responsible local authorities tried to include the German GB area, particularly the surveillance tracks, in the courses as much as possible, opposition in many parts of the planned courses came from various actors such as nature conservationists, foresters, local associations for hiking trails, private land owners, etc. An official who was in charge of the projects explained:

> Conservationists argued that the visitors should not be allowed to take a long course there, because there are habitats for protected animals like the Black Storks and other protected areas. The foresters also said that these places cannot be included, because they established certain hiking trails there. Then, we had to make a detour out of the GB and choose the course inside villages again (Interviewee 8, 2008).

The relationship between farmers and nature conservationists (e.g. local groups for nature conservation, local environmental NGOs) was another primary example of conflicts in the German GB. Conflicts escalated in the early period immediately after reunification. Some farmers were able to reclaim, on very favourable conditions, their land in the German GB, which was dispossessed during the GDR regime, and there were also some farmers who used the fallow land in the German GB illegally during the administratively unstable period. Conservationists, who tried to maintain the habitats in the former inter-German border area as a living monument, considered the increasing intensive farming a big threat. The conflict between them became less intense as policies regarding the use of German GB land, especially in relation to agricultural structure development, began to be systemized in the New Länder in the late 1990s (Interviewee 7, 2008; Interviewee 8, 2008). In addition, NGOs took action by the purchase of land. NGOs have purchased and protected some habitats of high conservational value or in need of restoration. Much of the land is leased to local farmers who accepted the

condition of environmentally friendly use, for instance, the use of grassland without pesticides and fertilizers (Interviewee 19, 2008).

6.4. Summary of the chapter

In order to complete governance analysis, this chapter identified the key actors of the German GB governance: federal, Länder and local governments, environmental NGOs, and local communities, and examined their interests, concerns, roles, power resources and other relevant characteristics.

The actors of the federal government and politicians have had a decisive impact on the governance of German GB conservation. This characteristic is unusual in comparison to the many other complicated goal conflicts and decision-making processes of German nature conservation (BN/BUND 2002: 270). This phenomenon is closely related in that a large part of the German GB land was owned by the federal government. With the recent take-over of previously federally owned land, the Länder became powerful in the German GB governance and could exert their authorities related to nature conservation and landscape management (Pflege) on more than half of the GB area. In general, local governments have relatively low interest in the German GB, and their interests and roles in the GB can be increased if elements of regional development are integrated into German GB policies.

Environmental NGOs, particularly BUND and NABU, have played a key role in initiating and developing the German GB and impacted policy development through lobbying and public relations. Their power factors are based on their organizational structure built on committed local groups, knowledge of and experience with the German GB, and networking capacity among many actors at different levels.

The local people had a negative attitude towards the former inter-German border and the concept of the German GB in the immediate aftermath of the reunification due to the tragic historical experiences associated with the areas. However, with time, they developed more interest in the potential for regional development through conservation and use of nature and historical monuments in the GB. Small local associations and private land owners impacted German GB policymaking and conservation projects as local-level land users.

Relationships between actors are rather complex due to the geo-ecological and socio-political characteristics of the German GB. Several relationships were examined in the aspects of cooperation and conflict. The public sector-NGO partnership is formed between environmental

NGOs and nature conservation authorities based on their shared interests in the conservation of the German GB. Horizontal information exchange and cooperation are often difficult between many different actors. More efficient horizontal networking systems within a federal state or between neighbouring counties are required. Conflicts can be identified between the federal and Länder authorities, which is also a general feature of the German environmental governance; conflicting relationships also exist between local environmental NGOs and the federal and Länder authorities over construction projects and between actors at the local level over land us.

7. Discussion of results

Chapter 7 provides a critical discussion of the findings from the analyses of data in Chapters 5 and 6 as well as the implications of those results for Korean DMZ policymaking. Through such a discussion, two research questions are addressed: "What are the success factors and the challenges of the German GB governance?" (Question 3) and "What can the Korean DMZ learn from the German GB?" (Question 4).

The first section of the chapter discusses the distinctive features of the evolution of the German GB governance system over the last two decades, based on the results from the analysis of the institutional framework and actors in the previous chapters. The following identification of the success factors and challenges of the German GB governance enhances the synthetic understanding of the present situation of the German GB governance.

Based on the comprehensive illustration and discussion of the German GB governance, recommendations for its improvement are presented, which can also contribute to the discourse on biodiversity governance as an empirical study. Finally, Section 7.2 discusses how the findings of the present study can be used in the policies for Korean DMZ conservation.

7.1. Features of the German GB governance system and moving forward

7.1.1. Features, success factors and challenges

Main Features of the evolution of the German GB governance

The present study examines the governance changes of the German GB from its creation to the present, focusing on the geo-ecological perspective of the ecological network based on the aspect of scale, as well as the interaction between social and ecological systems under the influence of the external political environment. The analysis of results verifies that the German GB governance system is characterized by the complex and dynamic nature of a large-scale socio-ecological system influenced by the specific socio-political context of the German GB.

The discussion on the features of the evolution of the German GB governance system converges on three aspects: (i) that cross-level and cross-sector institutional arrangements relating to the German GB have been hindered by a highly decentralized federal system; (ii) that NGOs have played a significant role in contrast to the relatively low commitment of other actors such as governments and local communities; and (iii) that the post-reunification environment highly

influenced the German GB governance, particularly its power distribution. These three features are discussed in more detail in the following paragraphs.

(i) Difficult cross-level and cross-scale institutional coordination in a highly decentralized system

Although the decentralization based on German federalism made some positive impacts on the development of the German GB governance, the governance effect has been reduced due to a multitude of horizontal and vertical decision points. The feature also resonates with current debates on the effectiveness of governance and efficiency of the multi-level governance approach (see Section 2.2.2).

The decentralization of biodiversity governance can potentially bring about considerable advantages, such as more sensitive management of local constraints and opportunities, and the promotion of creative initiatives from sub-national governments and civil society (Breton et al. 2007). After the German reunification, when no federal policy specifically for the conservation of the German GB was established, the concept and initiation of the German GB conservation framework was formed by NGOs. At the Länder level, the State of Saxony placed all of its GB area under protection and the State of Thuringia established strategies to prioritize conservation upon the principle of sustainability and carried out relevant policy measures. As such, the decentralized structure can provide Länder and other non-state actors with opportunities to implement innovative policies or projects, which can later be transferred to the federal level (Engel, Zimmermann 2007: 185).

On the other hand, negative effects of reducing governance capacity were identified in the German GB governance, as pointed out by several interviewees of the present study. They mentioned among other factors the difficulty of information sharing, the inefficient coordination of various actor interests and the slow and long processes of negotiation and decision-making (see Section 6.3.1).

The German administrative system is characterized by decentralization based on federalism. The federal government is mainly responsible for policy formulation, while the Länder and local governments are in charge of the implementation and enforcement of those policies (Engel, Zimmermann 2007: 184). Regarding nature conservation policy, the Länder also have legislative power, such as the power to designate protected areas. As a consequence, the authority of the federal government is often largely restricted, and there are often discrepancies in federal and Länder policies. Additionally, German environmental policies rely heavily on a regulatory approach with a relatively complicated and systematic juridical and bureaucratic method, which

contrasts the ad-hoc approach preferred by other European countries (Radkau 2005: 29; UBA n.d.: 70). The legal system for environmental protection is thus very complex, involving a large number of environmental regulations at the federal, Länder and local level (Engel, Zimmermann 2007: 192).

Although no explicit evidence exists suggesting that a federal or decentralized system has a lower capacity for developing environmental policies than do unitary states (SRU 2008: 315), decentralization can pose an obstacle to biodiversity governance despite considerable advantages (Barber 2004: 109). In general, biodiversity governance, particularly the governance of the ecological network at a large scale, faces the challenge of navigating complicated institutional arrangements and coordination. The German GB encompasses a wide range of institutions along the ecological network; additionally, relevant institutions are mostly demarcated by sectors (e.g. nature conservation, landscape management, agriculture, forestry, watershed management, tourism) and levels (e.g. federal, Länder and local). The demarcated sectoral and vertical structure of institutions makes cross-policy actions and cooperation more difficult to ensure.

For instance, the legally protected area systems such as NSGs, Nature Parks and National Parks, which are the most prominent conservation institutions, have been established at a rather small size and managed by different government authorities. In addition, around 4% of the GB area is owned and managed by environmental NGOs in the form of private protected areas. Recently, about 40% of the German GB area came to be managed by Länder under the framework of the National Natural Heritage. These different types of protected area governance (see Table 2.1) co-exist in the German GB ecological network, resulting in diverse conservation institutions. In addition, there are also many other institutions with various objectives in related sectors such as agriculture, forestry, watershed and tourism. Nevertheless, there has been no integrative governance mechanism that links relevant institutions and policies, and promotes cooperation among different levels of government across sectors and with other actor groups.

(ii) Significant role of environmental NGOs

Non-state actors, especially environmental NGOs, have played significant roles in developing the conservation framework and policymaking of the German GB. This feature of the German GB governance clearly demonstrates that government is not the only actor that can foster improvements in biodiversity governance. The role of NGOs in the German GB governance can be discussed in consideration of the institutional framework and actor participation.

In terms of the institutional framework, it is important to state that environmental NGOs

initiated the German GB conservation project immediately after reunification, while no actions were taken by the government. The early German GB conservation project, including its name, concept, boundaries and conservation goals, was set up by NGOs, albeit relatively roughly. The framework was then adopted in the policies of relevant Länder and the federal government. The first comprehensive habitat survey of the German GB was carried out in 2001-2002, initiated by the BUND, after it submitted a proposal for the project and secured necessary funds from the BfN. The survey results proposed conservation goals and measures to achieve them, which included a prompt transfer of federal land to Länder or nature conservation organizations, and provided the basic guidelines for the institutional development of German GB conservation (BN/BUND 2002).

In most cases, environmental NGOs are frequently involved in governing conservation programmes not only by providing technical advice to government agencies but also by managing protected areas (Borrini-Feyerabend et al. 2006: 126). In this regard, it is noteworthy that environmental NGOs such as BUND and NABU purchased private lands that have valuable habitats with funds raised through public donation projects. The habitats are conserved and managed in collaboration with local partners such as members of local groups of the NGOs, local associations, local authorities, or land users. Various measures for habitat rehabilitation or landscape management have been explored and applied, contributing to increased institutional options. For instance, management activities such as mowing and the clearance of shrubs are carried out in conjunction with job-creating measures, and some land plots are leased to local farmers via biodiversity management contracts (Interviewee 19, 2008).

In the aspect of actor cooperation, NGOs have advantages in connecting and coordinating diverse actors across the administrative borders, since they generally have less bureaucratic organizational structures and work cultures in comparison to government bodies and have close contacts with local people. In the German GB, cross-regional collaborations between local branches of national NGOs (e.g. BUND) or collaborations between different NGOs provided a useful basis for expanding horizontal (ecological network) and vertical (administrative level) cooperation between various actors.

Partnerships have formed between environmental NGOs and nature conservation authorities to address common issues, from the transfer of federal land at the federal level, to the habitat management at the local level. In some places, individuals belonging to both parties played an effective role in integrating the capacities of both NGOs and government authorities (see Section 6.3.1). However, such public-NGO partnership has been found only in areas where the responsible authorities are supportive of GB conservation, such as at the federal level and in the

federal state of Thuringia.

While environmental NGOs have taken an important role in improving the German GB governance, their role has some limitations in the broader environmental governance environment of Germany. Experts on the German environmental governance indicate that environmental NGOs have been frequently excluded from close involvement in the policy planning process despite the increased government support and participation in some policy initiatives (Engel, Zimmermann 2007: 188). In addition, NGOs should take caution not to overstep their roles, excessively absorb available resources (Borrini-Feyerabend et al. 2006: 138), or focus exclusively on nature conservation objectives, thereby inadvertently negatively impacting cooperation with other actors, such as local people and local governments.

(iii) Influence of post-reunification policy environment on power distribution

For approximately 10 years since the creation of the German GB, the governance power of the Länder as well as federal conservation authorities has been very limited, whereas the BMF wielded a large influence on the German GB governance. This was unusual considering the structures of other biodiversity governance in Germany, because Länder usually have the most responsibilities for nature conservation and landscape management including legislative power (see Section 6.2.1).

The formation of such governance structure was largely influenced by the economic, political and social situations of the post-reunification process. Land ownership of the German GB played a central role in the restructuring of the governance (see Section 5.2.2). In addition, under the post-reunification policy environment, in which economic issues were of top priority, interest in German GB conservation was marginalized in the federal government as well as in most Länder. The BMU, which was responsible for nature conservation policy at the federal level, had insufficient power to set up necessary conservation institutions or to influence policymaking that threatened GB conservation such as the Borderland Law. Such early factors surrounding the governance were clearly described by an interviewee:

> With regard to the federal government, there have long been many problems with the BMF. It took a long time for the BfN and the BMU to become active in GB conservation. The former Federal Presidents and Chancellors were also aware of the GB. But very few actions followed, and mostly just talk. […] After a very long time, in 2003, the BMU carried on the negotiations with the BMF and the Länder, which was, of course, never easy (Interviewee 16, 2008, translated by the author).

Such power distribution persisted for around a decade after the reunification. During this period, the German GB governance process depended mostly on centralized decision-making, unlike

most other nature conservation issues characterized by complex conflicts and decision-making processes. The situation surrounding the governance began to change beginning in the early 2000s with the emergence of the new green cabinet. A large part of the German GB (about 40% of the area) was transferred to six Länder for conservation purposes, recognized as National Natural Heritage in 2005. More federal land transfers are to follow. The multi-level character of the German GB governance became stronger.

Success factors and challenges of the German GB governance

Following the discussion on the main features of the evolution of the German GB governance over the last two decades, success factors and challenges of the German GB governance are broadly illustrated based on the SWOT analysis form, showing 'where the German GB governance is now.' The SWOT analysis is a useful tool to assess an issue of concern and highlight the internal and external factors of a certain project or issue - in this instance, governance - that are advantageous or disadvantageous in achieving an objective of governance, as well as in assisting the creation of recommendations for the achievement of the objective. The SWOT analysis consists of: strengths (positive factors), weaknesses (negative factors), opportunities (possible improvement), and threats (constraints and limitations) related to the issue in question (Abrams 2003: 87). The strengths and weaknesses are internal factors, and the opportunities and threats are external.

The four SWOT factors affecting the objective of improving the German GB governance effectiveness are drawn from the results of the present study and listed in Table 7.1. The strengths and opportunities of the table constitute the success factors of the German GB, and the weaknesses and threats the challenges. Overall, the success factors are: (i) an active role of the environmental NGOs and the high policy competencies at the lower government levels supported by decentralization; (ii) cooperation at the European level; and (iii) potential of local participation through the use of ecological and historical values. The challenges come mainly from: (i) the demarcated sectoral and vertical structure of institutions; (ii) complex land ownership arrangements with many different land owners including private ones; and (iii) low awareness and recognition of the values of the German GB by the public and many local government agencies.

Table 7.1: Success factors and challenges of the German Green Belt governance

SUCCESS FACTORS		CHALLENGES	
	Strengths		**Weaknesses**
	• Long accumulated technical and networking capacity of the environmental NGOs and their committed local workersPotential to initiate effective German GB conservation policies or projects at the Länder and local levels • Increased local perception on the values of the German GB and its use for sustainable regional development		• Difficulties in the coordination of highly decentralized institutions across levels and sectors • Remaining large proportion of privately owned land and highly split land ownership in the German GB • Low interest in and commitment to German GB conservation of many local governments
	Opportunities		**Threats**
	• Additional conservation values and institutional support at the federal and international levels through the European GB • Legal recognition of the importance of the national ecological network at the federal level		• Discord of environmental policy competencies between federal and Länder governments and conflicts among them • Low public awareness and interest on the ecological and historical values of the German GB

7.1.2. Recommendations to improve the German GB governance

The recommendations intend to provide key guidelines for the effective and efficient functioning of the German GB governance, that is, for the improvement of governance quality for the conservation of a national ecological network. The recommendations are based on the success factors and challenges identified above, and other findings of the present study, and thus serve as necessary governance solutions that will continue to uphold the success factors and effectively address the challenges of the German GB governance. The recommendations focus on the three interconnected aspects of institutional framework, actor cooperation and governance direction. Figure 7.1 shows the recommendations in relation to the identified success factors and challenges.

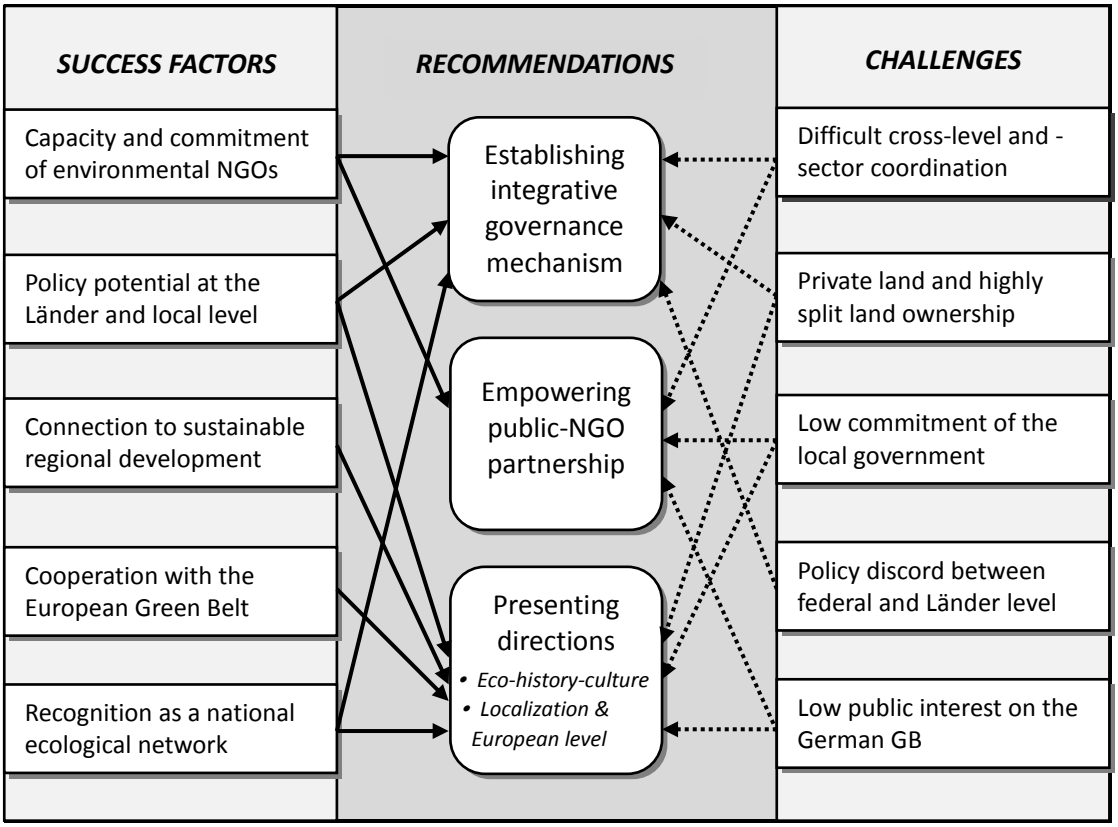

Figure 7.1: Schematic illustration of recommendations to improve the German Green Belt governance

(i) Establishing an integrative governance mechanism

An integrative governance mechanism for German GB conservation needs to be established, linking existing institutions and promoting cooperation among different levels of government, across government sectors, and between the government and civil society. The institutional framework should thereby counteract present problems of highly decentralized institutions and devise methods to include issues of 'biodiversity mainstreaming' into the policies of other relevant sectors, such as agriculture, forestry, tourism, construction and finance. In other words, cooperation across different governance types is necessary for the improvement of the German GB governance.

The federal environmental agency, the BMU, needs to play an active role in establishing an integrative governance mechanism at a higher scale. This has been requested by other actors such as NGOs (BUND 12.08.2009) and the interviewees of the present study. The following statement by one interviewee reveals such an opinion:

> It would be the best solution to make the entire German GB legally protected by the federal government, but it is very difficult under the present legal system. Therefore, the federal government should make a conservation framework that connects the different institutions and authorities dispersed

> across Länder, counties and municipalities (Interviewee 6, 2008, translated by the author).

As such, if the federal government does not "provide a unifying hand (Barber 2004: 109)," the large-scale conservation measures across administrative borders cannot be effectively carried out, and the habitat fragmentation of the German GB may increase due to the lack of policy coordination with relevant sectors such as construction and agriculture.

The recently amended Federal Nature Conservation and Landscape Management Act (2010) can be used as a constructive platform to initiate such integrative governance mechanism. According to the amended Act, the federal government can create and fully regulate nationally standardized nature conservation legislation (see Section 5.3.1); therefore, if the need for nationally applicable legislation is identified, some areas of nature conservation law that were previously regulated at the Länder level can be incorporated into federal law (BMU 2010: 7).

This recommendation is also supported by the discourse on scale in biodiversity governance included in the present study, which stresses that the levels and spatial scales of governance need to adapt to those of the issues or goals of the governed system (see Section 2.2.2). A primary conservation goal of the German GB is to maintain ecological integrity as a national ecological network, as agreed by all relevant actors and affirmed in official institutions; therefore, governance arrangements of the German GB on a spatial scale need to be strengthened to respond more effectively and efficiently to the ecological and socio-political problems and issues of the German GB.

The creation of an integrative governance mechanism does not imply that the decentralized system based on federalism is impeded or weakened. Rather, it intends to make the multi-level governance structure function effectively by enhancing the current weak institutional linkages and coordination of policies toward the effective balance between decentralized lower-level policies and centralized federal policies (Ostrom, Janssen 2004: 255), or creating a "middle path" (Cash et al. 2006) between them.

The type of integrative governance mechanism needs further study and discussion that are beyond the objectives of the present study. The mechanism may be based on nature conservation laws, particularly of protected area systems such as the National Natural Monument, as proposed by environmental NGOs, or it may begin with the creation of a more flexible institution such as a memorandum of understanding between relevant federal and Länder government authorities (Sandwith, Lockwood 2006: 578-579) defining cooperative governance arrangements for agreed upon strategies and goals.

(ii) Empowering the public-NGO partnership

The partnership between government and civil society, particularly NGOs, needs to be further strengthened. NGOs are increasingly recognized as the most appropriate actor for public policies or programmes that are difficult for the government to reach and are of little interest to the private sector (Edgar et al. 2006: 4). Collaboration between government agencies and NGOs has emerged for governing socio-ecological systems, bringing out many successful governance practices as exemplified by the German GB. The reason and motivation for the collaboration are clear. No government body has sufficient authority, knowledge and resources to implement the conservation objectives of, and adequately address, conflicts related to large ecosystems such as ecological networks; engaging NGOs can enhance the legitimacy of a democratic governing process (Edgar et al. 2006: 4). The partnership does not imply an equal distribution of power between the parties but should encompass various informal and formal arrangements (Edgar et al. 2006: 7).

The public-NGO partnership of the German GB governance has been limited in some levels and areas, and the benefits of the partnership have not been exploited enough to strengthen the structure of the governance. For more effective and sustained partnership development, it will be necessary to consider the following points. First, government actors at all levels need to enhance the cooperation with NGOs in various relevant sectors, such as nature conservation, agriculture, forestry and tourism, to enhance their governance capacity for German GB policies. The relatively weak participation and cooperation with NGOs involved in the history of the inter-German border and relevant historical monuments in particular need be promoted. Next, NGO partners should not be limited to major environmental NGOs. To ensure the legitimacy of the government and to promote diverse voices, other local NGOs in relevant sectors also need to be included in the governance processes.

More importantly, the objectives of partnerships need to be clearly established and shared by both the government and NGOs, and methods for the most effective contribution from each partner need to be indicated. The objectives need to be developed through discussion by all participating actors, and specific objectives may therefore differ according to the various actors and issues at stake. Nevertheless, some key general objectives can be deduced based on the overall governance situation of the German GB including its success factors and challenges. In particular, partnerships need to be built in pursuit of establishing the recommended integrative governance mechanism, which requires the participation of a wide range of actors in different sectors. Partnership objectives should also include the increase of the relatively low public and

local awareness of the German GB and its values. In addition to direct campaigns and publicity work (e.g. Green Share), various informal contact with local people through NGO activities, such as collaborative habitat management, is useful and should be effectively integrated into relevant government policy.

(iii) Presenting direction for the future of the governance through long-term conservation objectives

Long-term conservation objectives need to be formulated in consideration of the ecological, historical and social complexities of the German GB. In other words, the German GB governance needs to present the future direction for biodiversity governance to accomplish its goal of national ecological network conservation, based on present challenges and the availability of potential resources to meet those challenges. Such a long-term perspective provides some benefits as explained in a principle of direction for 'good governance' by Graham et al. (2003): to help estimate the optimal range of key actors and related institutional arrangements, to provide the setting in which management planning can effectively take place, and to facilitate the mobilization of political support as well as financial and human resources (Graham et al. 2003: 17-18; Swiderska et al. 2009: 29).

Such direction for the future of the German GB has not yet been explicitly discussed or presented, resulting in a lack of official national conservation strategies for the German GB. Discussion on GB policies has been mostly confined to problems or issues of conservation (e.g. land ownership) or management (e.g. habitat restoration, landscape management measures). However, similar initiatives have been taken on at a smaller scale focusing on ecological aspects. At the Länder level, Thuringia established a GB strategy in 1998 (see Section 5.1.2). Additionally, the system of objectives and action plans were presented by the BUND in 2002 (BUND 2002a) but were confined mostly to conservation measures.

Governance should adapt to changing natural environments and human societies (Ostrom, Janssen 2004) similarly to 'adaptive management,' which "emphasizes ongoing learning through iterative processes and fitting solutions to specific contexts" (Borrini-Feyerabend et al. 2006: 144). The present moment is timely for the formulation of the integrative and long-term conservation objectives of the German GB, in that the conflict over the transfer of federal land, which acted as a major uncertainty factor of the governance for long, has recently subsided. The future direction of the German GB should be based on two perspectives, which are discussed in the following paragraphs.

The first perspective is the thematic expansion of conservation goals through the incorporation

of historical and cultural values and resources. The German GB not only connects the habitats of over 600 rare and endangered species on the German Red List, but also serves as a living monument of modern German and European history (Ulrich 2009: 457). Since the mid-2000s, efforts to incorporate the historical and cultural values into ecological issues have been greatly promoted in German GB projects at different levels. The integration of the diverse activities of nature experience and encounters with the living history and distinctive culture of border areas have potential to create new perspectives in tourism and contribute to promoting sustainable regional development. The project Experience Green Belt (2007-2010) is an exemplary initiative that aimed to develop models of sustainable tourism in the German GB in a joint nature-culture-history context.

The development of the synergy between such values of the German GB can also create new governance opportunities, drawing more interest and participation of local actors and increasing the visibility of the German GB in the general public. The production of an audio guide for Experience Green Belt is a good example that proves that the interest and participation of local people can be effectively improved. The response to and participation of local people in the activity of recording the stories and histories of their areas was much higher than expected. Local people were very enthusiastic about recounting their personal experiences related to the former inter-German border and the local nature and culture (Interviewee 9, 2008)[60].

The second perspective that should be reflected in the future direction for the German GB governance is related to scale. It will be important to jointly pursue both localization and regionalization - i.e. Europeanization. The multi-level structure of governance (see Section 2.2.2) influences the German GB ecological network, from small-scale local levels (e.g. conservation and management of a Nature Conservation Area by a municipality) to the larger European level (e.g. Natura 2000, European GB).

Here, localization implies responding better to local interests and needs and increasing the role of local actors in line with the decentralization of biodiversity governance. The low levels of interest and participation of local governments and people were identified as one of the challenges of the German GB governance (see Table7.1); the future direction of the governance thus needs to meet this challenge through policy measures for localization. The promotion of the use of the integrated nature-culture-historical values of the German GB for sustainable regional

[60] The recorded stories can be accessed on the spot by mobile phone at the 65 information posts in the model region of Thuringian Forest and Slate Mountains (Thuringia) and the Franconian Forest (Bavaria) or via internet (BN).

development, as explained above, can be an effective approach for localization.

On the regional scale, the German GB policy goals came to be linked to and be integrated into the European level with the creation of the European GB in 2004. The actors of the German GB, such as the federal government and NGOs, have contributed to the operation and funding of European GB projects (see Section 5.2.2); the German contribution has been requested to continue, particularly because of the country's long experiences and various practices regarding conservation and management in the German GB as well as its larger funding capacity. The German GB can also benefit from cooperation at the European level. The benefit is not limited to nature conservation, effectuating connectivity within the greater framework of the extended ecological network. The governance power of German GB actors, particularly the federal government, can be enhanced in national politics and the general public through the mobilization of political and financial support for the German GB on national and European levels in a complex political environment with high competition for funding.

7.2. Implications for the Korean DMZ

Following the discussion on the German GB governance, this section aims to extract lessons from the discussion and apply them to the policies for Korean DMZ conservation. Section 3.4 examined both the similarities and differences of the two cases of Germany and Korea in order to properly consider the different social, political and cultural contexts of the two cases and avoid the error of merely applying the findings of one system to another.

The results of the German GB governance analysis clearly support the argument that the German experience can provide significant and useful implications that can be applied to policymaking processes of the Korean DMZ, particularly in the aspect of biodiversity governance in scale- and context-specific consideration. Lessons can be learned not only from the success factors of the German GB governance but also from its challenges and limitations.

The lessons from the German GB are intended to be applied particularly to the ROK's policies on preparing Korean DMZ conservation after military conflict ends, that is, after a peace or unification treaty between North and South Korea. This is because the ROK government and other actors involved in the conservation of the Korean DMZ Region have shown a great interest in its conservation, and also because the ROK is better situated economically, politically, and socially for preparing future policies regarding the Korean DMZ conservation. Although the implications are primarily supposed to address the future of the Korean DMZ, most of them need to begin now and be applied to present ROK policies. Since many institutional changes

and improvements of actor relationships occur slowly and often incrementally, preparation for the policies after a large political change need to begin as soon as possible.

In fact, preparation in advance is one of most significant lessons from the German GB. Germany had no policies in place regarding the conservation of the revived nature of the former-inter German border. When the reunification occurred suddenly, there was not enough time to discuss and plan conservation, management or the sustainable use of the borderlands. As a result, destructive uses of German GB habitats, such as intensive farming, commenced immediately after the opening of the border, and GB-relevant policies resulted in many conflicts among the actors. It will be increasingly difficult to establish and implement conservation policies as time elapses after the political system changes, as can be seen in the case of the German GB (Interviewee 2, 2008). In this regard, an interviewee advised the following:

> In Germany, all were surprised with the reunification. […] No one was well prepared for the situation at that time. It is good to have experience [from others]. Although one may not transfer the experience of Germany directly to Korea, it can be learned at least that conservationists should have a plan on what should happen in the DMZ when the military disappears there (Interviewee 19, 2008, translated by the author).

The present study arranges and describes the necessary policy directions based on the implications of the German GB in four aspects: (i) strengthening policy coordination based on decentralization, (ii) enhancing the role of environmental NGOs, (iii) increasing local awareness and participation in consideration of the complex socio-political and cultural context, and (iv) addressing the complex issue of land ownership.

(i) Strengthening policy coordination based on decentralization

Analysis of the German GB governance proved that decentralization has advantages for biodiversity governance, but links between multi-institutions and policy coordination are essential. Although somewhat different than the German GB, effective policy coordination in consideration of socio-political contexts is critical in the Korean DMZ both in present and the future.

In the Korean DMZ Region of the ROK, central and local government authorities have made many policies and projects relating to the conservation and use of the Korean DMZ region, which are sometimes overlapping, inconsistent or difficult to implement. Nevertheless, there is no effective governance mechanism to coordinate these various policies. Such features of governance are closely related to the influential governance factor of military security under the present system of national division, which often acts as a powerful constraint against policy

negotiations.

In the future peace regime when military power in the Korean DMZ Region will become weakened, many more policies and projects with various purposes are expected to appear at the central and local levels, unless present policies are effectively coordinated across sectors and levels through an integrative governance mechanism. The governance mechanism may partly use existing protected area system or biodiversity legislation such as the Biosphere Reserve and the Ecological Scenic Conservation Area, which are included in the Ministry of Environment's conservation plan for the Korean DMZ Region. However, the integrative governance mechanism should be comprehensive so as to function as a framework to bring together various actors and facilitate discussions and negotiations on the conservation of the Korean DMZ Region, as discussed in the recommendation for the German GB governance.

The experience of the German GB shows that it is difficult to build such a large-scale coordinating framework after unification, since environmental policies are likely to be neglected with high priorities placed on economic and social issues in the period of political system change. As such, a solid institutional framework should be designed in advance to be implemented as part of the overall unification policy with special efforts for biodiversity mainstreaming.

Along with the policy coordination, decentralization needs to occur in biodiversity governance for the Korean DMZ Region to improve policy outcomes and promote cooperation between central and local governments. The features of the German GB governance showed that a decentralized or multi-level institutional system has many advantages in biodiversity governance despite some potential constraints. The governance for conservation of the Korean DMZ Region, which is mainly based on a centralized environmental governance system, needs to be more decentralized.

The ROK is a centralized unitary state, and environmental authority, administration capacity and financial resources at the local level are relatively low. Although the authority of the central government has been substantially transferred to local governments following the municipalization of administration in 2001, most of the key authorities, such as legislative power, designation and management of major protected areas are concentrated in the central government (Kim, Kang 2004: 89); the cooperation between central and local governments is significantly limited.

Likewise, Korean DMZ-related policymaking and implementation have been mostly centralized and followed a top-down structure with less participation from local governments and

communities. The long history of centralized administration has resulted in a lower governance capacity at the local level as well as distrust and opposition on the central government's policies among local communities in the Korean DMZ Region (see Section 3.3.2).

Severe conflicts over the conservation projects in the Korean DMZ Region that the Ministry of Environment (1995-1996)[61] and the Cultural Heritage Administration (2000)[62] tried to implement are examples of the negative effect of the centralized governance system of Korean DMZ conservation (Korea Environment Institute 2003: 46; Kim 2000a). The local people and authorities in target areas of the CCA violently opposed the projects for protected area designation. The conflicts were particularly amplified due not only to the absence of long-term communication processes, but also the central government's top-down approach that did not sufficiently acknowledge local interests and roles in nature conservation (e.g. feeding migratory birds on harvested rice fields, watchdogs of habitats) and local sentiments (e.g. resistance to the many existing regulations in the area).

After unification or a similar system change, policies for the Korean DMZ conservation may face greater challenges in soliciting local acceptance of and participation in nature conservation efforts. In addition, the different socio-cultural features of North Korea should be considered in reference to the case of the German GB (see Section 6.1.3). Considering the given conditions, the centralized system that is hardly sensitive to complex local situations, will be ineffective in addressing properly the various issues and problems of the Korean DMZ Region. Local governments are better situated for the needs and interests of local actors and can improve the efficiency and effectiveness of the policies regarding the Korean DMZ region.

On the other hand, there are concerns that empowered local governments are more susceptible to lobbying by economic development interests and may promote more development projects, yielding to the demands of local communities for economic development (Kim 2000b: 47). But the local people in the Korean DMZ region do not solely want economic development; many locals support sustainable regional development in conjunction with nature conservation (see Section 3.3.2). Local governments need to be empowered to gain more legislative rights, and financial and technical support with a system to monitor the effects of decentralization (Kim,

[61] The Ministry of Environment tried to designate Ecosystem Conservation Areas (a strict type of national protected area) in the three major ecosystem regions in the CCA in Gangwon Province based on ecological survey results. Due to the strong opposition of local communities, the plan failed. The author participated in the project operation as a project coordinator.

[62] The Cultural Property Administration planned to extend the existing small Natural Monument Area (a strict type of national protected areas) in Cheolwon County, Gangwon Province; this plan also failed.

Kang 2004: 222). The improved policy outcomes and relationships between central and local governments through decentralization will also facilitate the central government's efforts to strengthen policy coordination.

(ii) Enhancing the role of environmental NGOs

Another analysis result of the German GB governance demonstrated that the government is not the only actor that can foster improvements in biodiversity governance. Environmental NGOs have played a significant role in enhancing the capacity of the German GB governance by initiating the German conservation framework, providing technical advice, conserving valuable habitats, increasing public awareness on the German GB and collaborating with government partners.

In contrast, the role of environmental NGOs in policymaking on the Korean DMZ conservation is relatively limited, although there are many national and local environmental NGOs that are committed to Korean DMZ conservation (see Section 3.3.2). In addition, cooperation between environmental NGOs and government authorities has not been effective, with the two parties often having different views on conservation policies. Although NGOs are often invited to round table discussions or government projects, they are considered to be participants representing individual issues or projects rather than potential policy partners.

As discussed in the German GB governance, public-NGO partnerships can bring many beneficial factors to address the various and complex problems and issues of the Korean DMZ region. The NGOs' strengths, resources and commitment need be utilized much more effectively for improving policy creation and implementation. The role of NGOs may become more important in the Korean DMZ Region in the transitional period after a peace or unification treaty, since the administrative power of the government regarding the borderlands is likely to be limited by considerable economic, social and political changes.

In addition, the environmental NGOs involved in Korean DMZ conservation should reinforce their expertise by securing more experienced staff members and developing effective and cooperative horizontal networks with other NGOs. These conditions served as the basis of the prominent role of environmental NGOs in the German GB governance.

(iii) Increasing local awareness and participation in consideration of the complex socio-political and cultural context

The present study identified that the German GB governance system was strongly influenced by the socio-political factors of the external policy environment, such as the history of national division, an armed border, sudden reunification, and the post-reunification process; the impact

of such factors was particularly strong in the early period following the reunification. Socio-political factors influenced not only institutional arrangements and the power distribution of the governance (see Section 7.1.1) but also the emotions and attitudes of local communities toward the German GB.

Most of the border installations along the former inter-German border were removed very quickly after the fall of the Berlin Wall, because local people wanted to eliminate the remains of the border connected to the tragic history of the nation. However, after approximately a decade, many local people came to regret the absence of the border installations, which could serve as popular tourist attractions and historical monuments as well as the sites of history education for younger generations (see Section 6.1.3).

The aversion to the border installations was interestingly contrasted with a more amicable attitude of local people toward the revived nature of the former border areas, although the attitude was not influential enough to lead to increased local participation in German GB conservation. Such different reactions were attributable to what the border installations and the nature of the former border areas symbolized (Interviewee 3, 2008). The border installations were perceived as a reminder of the tragic past, remnants of a death zone and national division, whereas the green nature of the border symbolized a life line and unity. Substantial awareness on the unique ecological and historical values of the German GB as well as the synergic impacts on sustainable regional development has developed belatedly among local communities, and the overall local awareness and interest on the German GB conservation is still relatively low (see Section 6.1.3).

Local attitudes toward the German GB after the reunification demonstrate the need for a context-sensitive approach to the future conservation policies of the Korean DMZ. The local people in the Korean DMZ Region on the ROK side have demonstrated a unique culture and emotional responses toward the region, which have mostly been created from longstanding and difficult life conditions with many restrictions due to military confrontation. Careful considerations also need to be made for the historical experiences of the local people on the North Korean side as well as their probable reactions to the idea of nature conservation.

A helpful strategy may be to raise local awareness on the significance of the ecological and historical values of the Korean DMZ and the potential contributions to sustainable regional development. In the German GB, an exemplary case is the project Experience Green Belt (2007-2010), which developed three model pilot tour programmes in the nature-history-culture context. Such tour projects should primarily aim to raise the awareness of local people and the general

public on the valuable resources of the areas rather than to develop short-term economic benefits (Interviewee 9, 2008). Efforts for increased awareness should begin as soon as possible, so that both ecological and historical heritage resources in the Korean DMZ can be maintained after changes to the political system, and continue to develop afterwards. A project for ecotourism of the Korean DMZ Region in the Gyeonggi Province (Gyeonggi Research Institute 2008) is an example of such an attempt (Interviewee 25, 2008).

(iv) Addressing the complex land ownership issue

Land ownership was a highly influential factor in structuring the German GB governance. Policies on the ownership of land in the former border areas, which were not systematically established due to the sudden reunification, eventually caused much conflict among governance actors and threatened the conservation of the German GB. Land ownership in the Korean DMZ is also very problematic and expected to be a difficult challenge for the future conservation and management of the Korean DMZ. Future policies on land ownership of the Korean DMZ need to be prepared and planned in advance of the peace regime, when the issue will rapidly rise to the forefront. In this regard, the experience of the German GB provides a useful lesson, particularly in the aspects of how land ownership can impact the governance structure as well as the desired institutional solutions.

It is extremely difficult to determine the status of land ownership within the Korean DMZ. The data on land ownership was mostly lost by the 1946 land reform in the DPRK and the 1949 farmland reform in the ROK, and they could not be restored due to the Korean War (1950-1953). According to a partial survey carried out in 1997 by the ROK Ministry of Justice in the Korean DMZ areas of Paju City and Yeoncheon County in Gyeonggi Province, ownership of 78% of the land was unknown and 16% was identified as privately owned (Jeon 2007: 152). The unknown land is also estimated to be mostly privately owned land. In the cases of the CCA and the Border Areas designated by the Borderland Support Law, no accurate information on land ownership exists despite the presence of a few more statistics. According to a cadastre survey in 2004, 54% of the land was estimated to be national or public land and 46% private land. 68.9% of the national or public land belonged to Gangwon Province, 29.0% to Gyeonggi Province, and 15.6% to Incheon Metropolitan City (Ministry of Environment of Republic of Korea, Korea Environment Institute 2007: 9-10; Jeon 2007: 152). Nevertheless, it is also quite difficult to accurately identify land owners in the CCZ and the Border Areas; not even the boundary of the Southern Limit Line has been clearly delineated for finance and military security reasons (Jeon 2007: 157).

There has been much concern among experts and NGOs about the unclear and complex land ownership of the Korean DMZ Region, and how to navigate the challenge when the peace regime is established. There is potential for great social confusion over ownership disputes, conflicts over uncontrollable land use, real estate speculation and severe ecological destruction. As a countermeasure, it is suggested that at least all of the Korean DMZ land and as many of the valuable habitats in the CCZ and the Border Areas as possible be made public land, which happened in Germany during the reunification process. In order for this to happen, land with unclear ownership should come under the ownership of the government, and private land should be purchased by public agencies (Hangyore 21 2007; Kim 2006b: 262; Kim 2000a: 47; Interviewee 23, 2008). Due to the unique social and economic conditions of the Korean DMZ, the nationalization of land will be more practical than other cases within the process of the establishment of a peace or unification treaty, which may contain large-scale reforms of the socio-political system of border areas. The German GB is an example that demonstrates this practicality.

In addition, the purpose of land nationalization for conservation should be specified, and the land should be managed by environmental authorities or similar organizations. In Germany, although most of the former borderland was federalized post-reunification, it was done so under the managerial responsibility of the BMF with no conservation objectives. The BMU and the Länder, which were explicitly responsible for nature conservation, could not play a specific role in the conservation of the German GB. Additionally, the federal land came to be privatized several years later for financial reasons with the establishment of the Borderland Law (see Section 5.2.2).

The financial burden of unification costs will make it more difficult to secure the necessary funds for the compensation of private land, as demonstrated by the case of the German GB. Some experts suggest that the central government establish a DMZ Conservation Fund. In addition to the DMZ Conservation Fund of the government, the National Trust[63] movement under the initiative of NGOs has been proposed as a potential solution since the mid-2000s (Hangyore 21 2007; Kim 2006b: 262-263). The first step has already been taken by the National Trust of Korea by the donation of forest land in the CCA in 2007, although the area is very small (The National Trust of Korea 2011). The Green Share project of the German BUND is a similar

[63] The National Trust, which first started in England in 1895, is a civic movement to protect valuable environmental and historical assets with voluntary donations and contributions by citizens (The National Trust of Korea 2011).

model, and it has been successful for raising funds through the participation of many donors and the purchase of private lands (see Section 5.2.2).

8. Conclusions and suggestions

The final chapter synthesizes the main findings drawn from the results of the present study, considering their contributions to the research aims and objectives as outlined in Section 1.2. The present study concludes by evaluating the effectiveness of the research and suggesting potential topics for further theoretical and practical research.

8.1. Conclusions

The present study examined the evolution of the German GB governance system and its current situation, using an analytical framework formulated for the research in specific consideration of geo-ecological - relating to a large-scale ecological network - and socio-political - relating to influence of the external policy environment - perspectives. Analysis of findings resulted in the identification of the main features of the evolution of the German GB governance as well as its current success factors and challenges (Research aim 1).

Characterized by the complex and large-scale socio-ecological system associated with its specific historical, social and cultural contexts, the German GB governance has evolved over time to embody the following notable features:

- cross-level and cross-sector institutional arrangements of the German GB have been hindered by a highly decentralized federal system;
- environmental NGOs have played a significant role in initiating the German GB conservation framework, contributing to institutional development and promoting actor cooperation; and
- the post-reunification policy environment had a large influence on the power distribution of the governance actors, particularly in the first decade after the creation of the German GB.

Based on a critical understanding of the German GB governance system, desirable changes in the governance for the successful conservation of the German GB were recommended in Section 7.1.2 (Research objective 1). In consideration of both the similarities and differences between the conditions and contexts of the German GB and the Korean DMZ, implications for the Korean DMZ conservation were provided in Section 7.2 (Research aim 2; Research objective 2). These lessons are not only to be considered in the future after a unification or peace treaty between the two Koreas, but should also be applied to present policy preparation agenda.

Additionally, the overall results of the present study contribute to some of the major issues of biodiversity governance. In particular, information is provided on governance at a bioregional scale, such as ecological networks of which the aspect of governance has not been frequently studied (Research aim 3). The results of the study are outlined, focusing on the conclusions of the main issues related to biodiversity governance in the following paragraphs.

First, the German GB governance proves that large-scale institutional arrangements are essential for enhancing the governance effectiveness and the achievement of conservation goals in the multi-level form or decentralization approach of biodiversity governance. This provides empirical evidence to the debates on governance effectiveness and efficiency in a multi-level governance approach, which were elaborated in Section 2.2.2.

The German GB governance has benefited from the advantages of a decentralized system, such as innovative initiatives for German GB conservation by NGOs as well as Länder and local governments. However, the absence of an integrative governance mechanism at the federal level, which can complement the demarcated sectoral and vertical structure of the institutional framework, has created negative effects for the governance. As a result, conservation of the German GB has been frequently at risk, with increasing rates of private land ownership and habitat fragmentation.

In this regard, the present study strongly supports the arguments of Ostrom et al. (2004) and Cash et al. (2006), who state that it is neither desirable nor helpful to focus on advocating or adopting one of two opposite approaches, such as the top-down versus bottom-up approach or centralization versus decentralization. A single-approach solution cannot appropriately address the complexities of a socio-ecological system; rather, the attributes of the all approaches need to be employed and explored to reach an effective balance between them. This balancing approach is also applied to implications for Korean DMZ conservation, as described in Section 7.2.

Second, the important role of environmental NGOs in the German GB governance demonstrates that government is not the only actor that can improve biodiversity governance. With the global trend of increasing decentralization, it is recommended that NGOs play many active roles to yield a variety of improvements and address concerns of biodiversity governance (Ramirez 1999: 106; Borrini-Feyerabend et al. 2006: 138).

The environmental NGOs of the German GB not only paved the way for the government to initiate the conservation framework for the German GB immediately after the reunification, but also contributed to improving governance by providing technical expertise, increasing local and public awareness of the German GB, collaborating with other actors, managing NGO-owned

habitats and forming occasional partnerships with the government. The present study identified the long accumulated technical and networking capacities of environmental NGOs as one of the success factors of biodiversity governance in the German GB. Despite the considerable benefits and potential of the NGOs' roles, however, they cannot replace the importance of the public sector. By building more effective and robust partnerships between bodies of government and NGOs, the overall capacity of the governance can be enhanced.

Noting NGO contributions to and improvement of the German GB governance, the present study concluded that the role of NGOs in the biodiversity governance of the Korean DMZ must be strengthened; the governance should take advantage of the strengths, resources and commitment of NGOs to better address the considerable challenges of present and future issues of Korean DMZ conservation.

Third, empirical study on the German GB governance effectively illustrates how the external policy environment can influence governance. Context-specific consideration in the governance analysis is stressed by many scholars to better reflect the specific circumstances linked to governance (Benz 2004b; Scharf 1997; Graham et al. 2003; Abrams 2003; Nuissl, Heinrichs 2011). The external policy environment implies the economic, political and/or social situations of the governance system and changes to the system, which are rarely influenced by actors. As such, the external policy environment is a crucial factor to consider in the context-specific governance analysis.

The German GB was created immediately after the German reunification, which resulted in significant economical, social and political changes throughout the entire society. The GB governance was strongly influenced by this post-reunification policy environment. Policies on the ownership of the former inter-German border area focused on securing sources of financial gain due to the worsened economic situation typify such an influence, posing a significant threat to the conservation of the German GB and causing conflicts among actors. Land ownership distribution also led to an unusual structure of biodiversity governance in Germany with a more influential federal level of government, specifically the BMF, than Länder administrations. Additionally, the power of nature conservation authorities was further restricted due to serious post-reunification economic problems.

Accordingly, the results of the present study reveal that the context-specific governance approach facilitates an understanding of the complexities of the governance system and contributes to better addressing its broadly interconnected issues. This approach also needs to be applied to the biodiversity governance of the Korean DMZ.

8.2. Suggestions for further research

The last section of the dissertation evaluates the effectiveness of the whole research and suggests further necessary research based on the results of the present study. The method of the present study is characterized as an empirical study based on a governance analysis of a bioregional socio-ecological system. Perspectives of the multi-level governance structure and the influence of the external policy environment were particularly considered to devise ways to make the analysis of results properly operational in the specific ecological and socio-political context of the German GB. How effective, then, was this analytical framework?

First of all, the concept of governance helped the author in handling the complexities of the German GB as a socio-ecological system. The impacts of major institutions as well as their changes to actor relationships and policy outcomes were identified in this process. It was also effective to acknowledge the roles and influences of actors who do not have formal decision-making authority, such as NGOs. The context-specific analytical framework of the present study was conducive to a general overview of the whole governance system including actors, and to comprehensively illustrate its success factors and challenges.

There were also difficulties or limits. The concept of governance has potential for wide usage in connection with various theories and approaches. On the other hand, its "vague and inclusive" (Benz 2004b: 27) character does not allow clear and detailed guidelines for building an analytical framework, and thus the author had to allocate much time for the elaboration and improvement of the analytical framework. Additionally, some major issues identified in the analysis process, such as land ownership policies or successful local governance practices, could not be deeply elaborated upon and developed. Since the present study is concerned with a large spatial scale, a national ecological network involving 9 Länder, as well as a long time period of about two decades of German GB history, the author had to focus on a comprehensive approach and could not deal meticulously with individual issues. However, the identified major issues may be examined more effectively in further studies with a comprehensive understanding of the governance system as a whole, as provided by the present study.

Next, two points must be mentioned concerning the research process. First, the present study used a relatively high proportion of grey literature, such as technical reports from government agencies or scientific research groups, because research and academic publications regarding ecological network governance or policies on the German GB were very limited. The continuous monitoring of mass media, such as press releases of the relevant organizations and news articles on the German GB, helped the present study stay up-to-date with the progress of

relevant major policies such as the National Natural Heritage. The use of grey literature and media materials also contributed to broadening and deepening the data, which was gathered during a field visit as well as to applying the triangulation approach (see Section 2.4).

Second, it was difficult to explicitly assess the effectiveness of the specific governance arrangements due to the lack of updated data on the conservation status of the German GB, such as data on the area of privatized land or the types and area of protected areas in the German GB. After the 2001-2002 habitat type survey by the BUND, no further comprehensive data collection has been officially undertaken. The overall lack of information on the German GB and the information gap among key actors need to be overcome soon through an integrative system for information collection in collaboration with relevant Länder.

The present study presented recommendations for improving the German GB governance as well as necessary policy directions for the Korean DMZ conservation developed from the results of the German GB governance analysis. Some significant themes, which need to be studied in order to elaborate and develop the recommendations and policy directions, are suggested here for further theoretical and practical research.

Relating to the German GB governance, research is suggested on the following themes:

- the best type of integrative governance mechanism to conserve the large-scale German GB ecological network;
- more effective and expanded partnership between all levels of government and NGOs; and
- the roles of federal, Länder and local governments and NGOs in establishing and adhering to long-term conservation objectives .

Concerning the biodiversity governance of the Korean DMZ, research is suggested on the following themes:

- the decentralization measures necessary for effective governance cooperation between central and local levels of government bodies relevant to the conservation of the Korean DMZ Region;
- governance opportunities in which NGOs can effectively contribute their strengths and resources to improve Korean DMZ policymaking:
- lessons from the development of sustainable tourism in the German GB for the Korean DMZ Region, particularly in terms of tour concepts, actor participation and

cooperation as well as the coordination of tour projects at the local level along the German GB and;

- potential institutional and financial mechanisms for the nationalization of Korean DMZ land.

Consequently, the present study, the first of its kind in dealing with policy research on the German GB, can be regarded as a basis on which to build advanced research on the specific aforementioned topics, and leaves much room for further research on how to improve biodiversity governance of the German GB and the Korean DMZ, as well as to enrich the discourse on scale- and context-specific approaches to biodiversity governance.

References

Abrams, P.,Borrini-Feyerabend, G.,Gardner, J. & Heylings, P. (2003). Evaluating governance . *A governance to accompany a participatory process for a protected area:*PARKS CANADA and TILCEPA

Badische Zeitung (09.11.2009). Es lebe der Todesstreifen. In de. Available from: http://www.badische-zeitung.de/deutschland-1/es-lebe-der-todesstreifen--22064007.html [accessed 05.03.2011]

Barber, C. Victor (2004). Parks and people in a world of changes: Goverance, participation and equality. In Barber, C. Victor,Miller, K. R.& Boness, M.(Eds.). Securing protected areas in the face of global change, pp.97–135. Gland, Switzerland and Cambridge, UK

Becker, A. (2004). Wie Gras über dis Geschichte wächst. Orte der Erinnerung an der ehmaligen deutsch-deutschen Grenze . Diplomarbeit. Berlin, Germany:Technische Universität Berlin

Bennett, G. & Mulongoy, K. Jo (2006). *Review of experience with ecological networks, corridors and buffer zones.* Montreal: Secretariat of the Convention on Biological Diviersity

Bennett, G. & Wit, P. (2001). *The development and application of ecological networks . A review of proposals, plans and programmes.* Gland, Switzerland: IUCN

Benz, A. (2004a). Einleitung: Governance - Modebegriff oder nützliches sozialwissenschaftliches Konzept? In Benz, A.(Ed.). Governance - Regieren in komplexen Regelsystemen: eine Einfürung, pp.11–28. Wiesbaden, Germany. VS Verlag für Sozialwissenschaften

Benz, A. (Ed.) (2004b). Governance - Regieren in komplexen Regelsystemen: eine Einfürung. Wiesbaden, Germany: VS Verlag für Sozialwissenschaften

Benz, A.,Lütz, S.,Schimank, U. & Simonis, G. (Eds.) (2007a). Handbuch Governance . *Theoretische Grundlagen und empirische Anwendungsfelder.* Wiesbaden, Germany: VS Verlag für Sozialwissenschaften

Benz, A.,Lütz, S.,Schimank, U. & Simonis, G. (2007b). Einleitung. In Benz, A.,Lütz, S.,Schimank, U.& Simonis, G.(Eds.). Handbuch Governance, pp.9–26. Wiesbaden, Germany. VS Verlag für Sozialwissenschaften

BfN (Bundesamt für Naturschutz) (2009). *Das Grüne Band: vom Todesstreifen zur Lebenslinie.* Bonn, Germany: BfN

BfN (Bundesamt für Naturschutz) (2010). Grünes Band. Available from: http://www.bfn.de/0311_gruenes_band.html [accessed 08.03.2011]

BImA (Bundesanstalt für Immobilienaufgaben) (26.08.2010). *Sachsen übernimmt Flächen des Grünen Bandes*. Available from: http://www.bundesimmobilien.de/de/informationen/presse/pressemeldungen/2010/08/sachsen_uebernimmt_flaechen_des_gruenen_bandes/index.php [accessed 05.03.2011]

BMU (Bundesministerium für Umwelt, N. und Reaktorsicherheit) (30.04.2009). *Grünes Band wird dauerhaft gesichert* . Pressemitteilung Nr. 123/09. In de. Available from: http://www.bmu.de/pressearchiv/16_legislaturperiode/pm/43906.php [accessed 25.04.2011]

BMU (Bundesministerium für Umwelt, N. und Reaktorsicherheit) (20.08.2009). *Gabriel: Grünes Band soll Nationales Naturerbe werden* . Pressemitteilung Nr. 267/09. In de. Available from: http://www.bmu.de/pressearchiv/16_legislaturperiode/pm/44793.php [accessed 07.03.2011]

BMU (Bundesministerium für Umwelt, N. und Reaktorsicherheit) (2010a). *Das neue Bundesnaturschutzgesetz . Einheitlich und bürgernah.* Berlin, Germany: BMU

BMU (Bundesministerium für Umwelt, N. und Reaktorsicherheit) (2010b). Sicherung des Nationalen Naturerbes. Available from: http://www.bmu.de/naturschutz/nationales_naturerbe/doc/37715.php [accessed 07.03.2011]

BMU (Bundesministerium für Umwelt, N. und Reaktorsicherheit) (24.06.2010). *Meilenstein zum Schutz des Grünen Bandes . Förderbescheid zum Naturschutzgroßprojekt "Grünes Band Rodachtal - Lange Berge - Steinachtal" übergeben* . Nr. 097/10. In de. Available from: http://www.bmu.de/pressemitteilungen/aktuelle_pressemitteilungen/pm/46164.php [accessed 08.03.2011]

BMU (Bundesministerium für Umwelt, N. und Reaktorsicherheit) (28.01.2011). *Letzte Lücke im Grünen Band geschlossen . Heinen–Esser: Das größte Biotopverbundsystem in Deutschland ist vollendet* . Pressemitteilung Nr. 016/11. In de. Available from: http://www.bmu.de/pressemitteilungen/aktuelle_pressemitteilungen/pm/46962.php [accessed 07.03.2011]

BMU (Federal Ministry for the Environment, N. Conservation and Nuclear Safety) (2007). *National Strategy on Biological Biodiversity . Adopted by the Federal Cabinet on 7 November 2007.* Bonn, Germany: BMU

BMU (Federal Ministry for the Environment, N. Conservation and Nuclear Safety) (2009). Report on the State of Nature for the 16th Electral Term. Berlin, Germany: BMU

BN/BUND (2002). *EuE-Vorhaben "Bestandsaufnahme Grünes Band" . im Auftrag des Bundesamts für Naturschutz (BfN).* Nürnberg, Germany: BN / BUND

Bode, V. (1995). Die Raumbedeutsamkeit einer Staatsgrenze. In Grimm, F.-D.(Ed.). Regionen an deutschen Grenzen, pp.17–31. Leipzig, Germany. Institut für Länderkunde

Borrini-Feyerabend, G. (2003). Goverance of protected areas - innovation in the air. *Policy Matters,* pp.92–101

Borrini-Feyerabend, G.,Johnston, J. & Pansky, D. (2006). Governance of protected areas. In Lockwood, M.,Worboys, G. L.& Kothari, A.(Eds.). Managing protected areas, pp.116–145. London, UK. Earthscan

Boyd, C. (2004). Protected landscapes, corridors, connectivity and ecological networks. In Secretariat of the Convention on Biological Diviersity (SCBD)(Ed.). Biodiversity issues for conservation in the planning, establishment and management of protected area sites and networks, pp.73–81. Montreal, Canada. SCBD

Breton, A.,Brosio, G.,Dalmazzone, S. & Garrone, G. (Eds.) (2007). Environmental governance and decentralisation. Cheltenham, UK: Elgar. Available from: http://www.gbv.de/dms/bowker/toc/9781847203984.pdf

Bryman, A. (2001). *Social research methods.* Oxford, UK: Oxford Univ. Press. Available from: http://www.loc.gov/catdir/enhancements/fy0639/2001021259-t.html

BUND (Bund für Umwelt und Naturschutz Deutschland) (2002a). *Das Grüne Band . Ein Handlungsleitfaden.* Nürnberg, Germany: BUND

BUND (Bund für Umwelt und Naturschutz Deutschland) (2002b). Eigentumsverhältnisse im Grünen Band . *Teiluntersuchung zum E+E-Vorhaben "Bestandsaufnahme Grünes Band".* Nürnberg, Germany:BUND

BUND (Bund für Umwelt und Naturschutz Deutschland) (Autumn 2007). *Aktionärs-Brief*

BUND (Bund für Umwelt und Naturschutz Deutschland) (2008). *Das Grüne Band . Spenden-Rundbrief 1.* Spring 2008. Berlin, Germany.

BUND (Bund für Umwelt und Naturschutz Deutschland) (2009). *Das Grüne Band . Spenden-Rundbrief 3.* Spring 2009: BUND

BUND (Bund für Umwelt und Naturschutz Deutschland) (08.12.2009). *Das Grüne Band muss endlich umfassend geschützt werden . BUND.net > Presse > Pressemitteilungen > 8. Dezember 2009 Das Grüne Band muss endlich umfassend geschützt werden Naturschutzprojekt entlang des ehemaligen innerdeutschen Grenzstreifens wird am 9. Dezember 20 Jahre alt*. Available from: http://www.bund.net/index.php?id=936&tx_ttnews[tt_news]=3034&tx_ttnews[backPid]=447 [accessed 24.03.2011]

BUND (Bund für Umwelt und Naturschutz Deutschland) (2011). Grünes Band. Available from: http://www.bund.net/bundnet/themen_und_projekte/gruenes_band/ [accessed 05.03.2011]

BUND (Bund für Umwelt und Naturschutz Deutschland) (15.12.2010). *Biotopverbund an innerdeutscher Grenze als "Nationales Naturmonument" schützen*. Available from: http://www.bund.net/nc/bundnet/presse/pressemitteilungen/detail/browse/2/zurueck/pressemitteilungen/artikel/im-20-jahr-der-deutschen-einheit-flaechen-im-gruenen-band-nicht-privatisieren-biotopverbund-a/ [accessed 07.03.2011]

BUND Thüringen (2008). *Jahresbericht 2007.* Erfurt, Germany: BUND Thüringen

Cash, D. W.,Adger, W. N.,Berkes, F.,Garden, P.,Lebel, L.,Olsson, P.,Pritchard, L. & Young, O. (2006). Scale and cross-scale dynamics: Governance and information in a multilevel world. *Ecology and Society.* 2. Available from: http://www.ecologyandsociety.org/vol11/iss2/art8/

CDU,CSU & SPD (11.11.2005). *Gemeinsam für Deutschland – mit Mut und Menschlichkeit . Koalitionsvertrag zwischen CDU, CSU und SPD*. Available from: http://www.cdu.de/doc/pdf/05_11_11_Koalitionsvertrag.pdf

Choi, J. (2005). *A Study on the International Environmental Cooperation for Establishment of North East Asia Ecological Network.* Seoul, Korea: Seoul National University

Council of Europe (2011a). Emerald Network: Joint programmes Council of Europe / European Union. Available from: http://www.coe.int/t/dg4/cultureheritage/nature/econetworks/JP_en.asp [accessed 27.02.2011]

Council of Europe (2011b). The Pan-European Biological and Landscape Diversity Strategy. Available from: http://www.coe.int/t/dg4/cultureheritage/nature/Biodiversity/default_en.asp [accessed 27.02.2011]

Davidson, D. J. & Frickel, S. (2004). Understanding Environmental Governance . *A Critical Review. Organization & Environment.* 4, pp.471–492

DBU (Deutsche Bundesstiftung Umwelt) (2011). DBU Naturerbe sichert 46.000 Hektar für den Naturschutz. Available from: http://www.dbu.de/naturerbe [accessed 24.02.2011]

Der Tagesspiegel (04/09/2010). Vom Todesstreifen zur Lebenslinie. *Der Tagesspiegel. In* German. Available from: www.tagesspiegel.de/wissen/tierwelten/vom-todesstreifen-zur-lebenslinie/1918086.html

Deutsche UNESCO-Kommission e.V. (2007). Unsere neuen Nationalparke sind eigentilich Biosphärenreservate . *Interview mit Michael Succow. UNESCO heute,* pp.84–89

Deutsche Welle (07.11.2005). Letting the grass grow over history. *Deutsche Welle. Available from:* http://www.dw.de/dw/article/0,,1765430,00.html

Dey, I. (1998). *Qualitative data analysis . A user-friendly guide for social scientists.* Repr. London, UK: Routledge

Dietz, T.,Ostrom, E. & Stern, P. C. (2003). The struggle to govern the commons. *Science,* pp.1907–1912 [accessed 12.11.2009]

EAAF Partnership Secretariat (2011). Partnership for the East Asian-Australasian Flyway. Available from: http://www.eaaflyway.net./ [accessed 19.04.2011]

Edgar, L.,Marshall, C. & Bassett, M. (2006). *Partnership . Putting good governance principles in practice.* Ottawa, Canada: Institute On Governance

Engel, S. & Zimmermann, M. (2007). Environmental institutions in Germany: Leader or laggerd? In Breton, A.,Brosio, G.,Dalmazzone, S.& Garrone, G.(Eds.). Environmental governance and decentralisation, pp.173–222. Cheltenham, UK. Elgar

European Commission (10.03.2011). Natural 2000 network. Available from: http://ec.europa.eu/environment/nature/natura2000/index_en.htm [accessed 22.04.2011]

Engels, B.,Heidrich, A.,Nauber, J.,Riecken, U.,Schmauder Heinrich & Ullrich, K. (Eds.) (2004). Perspectives of the Green Belt . *Chances for an Ecological Network from the Barents Sea to the Adriatic Sea?:*Bundesamt für Naturschutz (BfN), [accessed

Folke, C.,Pritchard, L. 3., JR.,Berkes, F. Colding Johan & Svedin, U. (2007). The Problem of Fit between Ecosystems and Institutions: Ten Years Later. *Ecology and Society.* 1 . Available from: http://www.ecologyandsociety.org/vol12/iss1/art30/ [accessed 05.11.2009]

Frobel, K. (2009). The Green Belt: Lifeline in no man's land . *The beginnings of the Green Belt. In* Wrbka, T.,Zmelik, K.& Grünweis, F. Michael(Eds.). The European Green Belt, pp.16–19. Weitra, Austria. Verlag Bibliothek der Provinz

Frobel, K.,Riecken, U. & Ullrich, K. (2009). Das "Grüne Band" - das Naturschutzprojekt Deutsche Einheit. *Natur und Landschaft - Zeitschrift für Naturschutz und Landschaftspflege.* 9/10, pp.399–403

Geidezis, L. & Kreutz, M. (2004). Green Belt Europe . *Nature knows no boundaries. Urbani Izziv.* 2, pp.135–138

Geidezis, L. & Kreutz, M. (2006). The central European Green Belt. In Terry, A.,Ullrich, K.& Riecken, U.(Eds.). The Green Belt of Europe, pp.46–60. Gland, Switzerland and Cambridge, UK. IUCN

German Federal Press and Information Bureau (2000). *Facts about Germany.* Frankfurt/Main, Germany: German Federal Press and Information Bureau

Gibson, C. C.,Ostrom, E. Ostrom & Ahn, T. K. (2000). The concept of scale and the human dimensions of global change: a survey. *Ecological Economics,* pp.217–239

Giddens, A. (1986). *The constitution of society . Outline of the theory of structuration.* First paperback ed. Berkeley, USA: Univ. of California Press

Glaeser, B. (1995). *Environment, development, agriculture : integrated policy through human ecology.* Armonk, N.Y.: M.E. Sharpe

Görg, C. (2007). Landscape governance . *The "politics of scale" and the "natural" conditions of places. Geoforum,* pp.954–966

Graham, E. (1997). Philosophies underlying human geography research. In Flowerdew, R.& Martin, D.(Eds.). Methods in human geography, pp.6–30. Harlow. Longman

Graham, J.,Amos, B. & Plumptre, T. (2003). *Governance principles for protected areas in the 21st century.* Ontario, Canada: Institute On Governance

Green Korea United (2008). *Walking 155 Mile of the DMZ . 2008 Environment Report of the Demilitarized Zone.* Seoul, Korea: Green Korea United

Grimble, R. & Wellard, K. (1997). Stakeholder Methodologies in Natural Resource Management: a Review Principles, Contexts, Experiences and Opportunities. *Agricultural Systems.* 2, pp.173–193

Grüne Landtagsfraktion Thüringen (2011). Grünes Band als Nationales Naturmonument ausweisen. Available from: http://gruene-fraktion.thueringen.de/aktuelles/thema/detailansicht/article/gruenes-band-als-nationales-naturmonument-ausweisen///8426812a3f80c3c16abbb4715d7050be.html [accessed 07.03.2011]

Gyeonggi Research Institute (2008). *Reserach for the creation of a park for peace and ecosystem and the ecotourism development in the DMZ area.* Suwon, Korea: Gyeonggi Research Institute

Hangyore 21 (20.09.2007). Report on the DMZ 248km. Available from: http://h21.hani.co.kr/section-021003000/2007/09/021003000200709200678062.html [accessed 01.04.2011]

Hanns Seidel Foundation in Korea (2007). Study trip of a delegation of Gyeonggi Province to the former innner-German border. Available from: http://www.hss.or.kr/A0002English.html [accessed 12.04.2011]

Hanns Seidel Foundation in Korea (2010). MoU for a partnership between Goseong County and Bayreuth County got signed. Available from: http://www.hss.or.kr/A1220English.html [accessed 12.04.2011]

Heinz Sielmann Stiftung (2011). Official website of the Heinz Sielmann Stiftung. Available from: http://www.sielmann-stiftung.de/ [accessed 10.03.2011]

Hwang, J. (2000). Regional development of the intra-Korean border area after the Korean unification. In Kim, C.-H.(Ed.). DMZ II - from horizontal division to vertical connection, pp.172–200. Sowha

Hwang, J. (10.02.2000). Zur Regionalentwicklung des innerkoreanischen Grenzgebiets auf der Grundlage eines Wiedervereinigungs-Szenarios . Doctoral thesis. Dortmund, Germany:Dortmund Univeristy

IUCN (2007). *Connectivity conservation . International experience in planning, establishment and management of biodiversity corridors.* Gland, Switzerland: IUCN

IUCN Regional Office for Europe (2009). *European Green Belt Newsletter.* Brussels, Belgium: IUCN Regional Office for Europe

Jaššo, M. (2008). Corss-border conservation challenges . *Positioning the Vienna-Bratislava region. In* Leibenath, M.,Korcelli-Olejniczak, E.& Knippschild, R.(Eds.). Cross-border governance and sustainable spatial development, pp.87–100. Berlin, Heidelberg. Springer

Jeffery, M. I. (2004). An International Legal Regime for Protected Areas. In Scanlon, J.& Burhenne-Guilmin, F.(Eds.). International environmental governance, pp.11–40. IUCN

Jeon, S. Woo (2007). Polices for the Enviornmental Conservation of the DMZ Region. In Eco-Horizon Institute(Ed.). Environmental conservation of the DMZ and its adjacent area and future tasks, pp.129–163. Seoul, Korea. Eco-Horizon Institute

Jongman, R. H. G. & Pungetti, G. (2004). Introduction: ecological networks and greenways. In Jongman, R. H. G& Pungetti, G.(Eds.). Ecological networks and greenways, pp.1–6. Cambridge, UK. Cambridge Univ. Press

Ju, G.-y. (2007). Review of the ecological survey in the DMZ and its adjacent area and future tasks. In Eco-Horizon Institute(Ed.). Environmental conservation of the DMZ and its adjacent area and future tasks, pp.165–182. Seoul, Korea. Eco-Horizon Institute

Kang, Y.-s. (2006). Ecological environment and North-South regional coooperation in the DMZ and its adjacent areas. In Institute for North Korean Studies of Dongguk University(Ed.). The DMZ´s ecology and peace of the Korean Peninsula, pp.375–396. Seoul, Korea. Institute for North Korean Studies of Dongguk University

Kim, C.-H. (2000a). DMZ as the WIn-win. In Kim, C.-H.(Ed.). DMZ II - from horizontal division to vertical connection, pp.15–50. Sowha

Kim, C.-H. (2006a). *Exploring the DMZ . For Inter-Korean peace and intra-Korean Accommodation.* Seoul, Korea: Oruem

Kim, C.-H. (Ed.) (2000b). DMZ II - from horizontal division to vertical connection: Sowha

Kim, J.-S. & Kang, H.-S. (2004). *Enviornmental Goverancne . Building an environmental management network for sustainable development.* Seoul, Korea: Jipmoondang

Kim, K.-g. Mi-young；Choi Hui-seon (2006b). Status and conservation of the DMZ ecosystem. In Institute for North Korean Studies of Dongguk University(Ed.). The DMZ´s ecology and peace of the Korean Peninsula, pp.218–277. Seoul, Korea. Institute for North Korean Studies of Dongguk University

Kim, Y.-b.,Lee, S.-b. & Kim, E. Jung (2009). *A study of the implementation plan for exchange and cooperation projects between North and South Korea in the Demilitarized Zone.* Anyang, Korea: Korea Research Institute for Human Settlements. In Korean.

Kjær, A. Mette (2004). *Governance in political science.* Cambridge, UK: Polity Press

Kluvánková-Oravská, T.,Chobotová, V.,Banaszak, I.,Slavikova, L. & Trifunovova, S. (2009). From government to governance for biodiversity: the perspective of central and Eastern European transition countries. *Environmental Policy and Governance.* 3, pp.186–196

Kooiman, J. (2003). *Governing as governance.* London, UK: Sage Publication Ltd.

Kooiman, J.,Bavinck, M.,Chuenpagdee, R.,Mahon, R. & Pullin, R. (2008). Interactive governance and governability: an Introduction. *The Journal of Transdisciplinary Environmental Studies.* 1, pp.1–11

Korea Environment Institute (2003). *An environment conservation master plan for the Korea DMZ area.* Seoul, Korea.

Korea Forest Research Institute (2000). *Comprehensive report of the forest ecosystem survey in the DMZ and border areas: 1995~2000*

Korea Research Institute for Human Settlements (2003). *A study on the Peace Belt blueprint in the border region in relation to the recoonection of Gyeongui and Donghae Railroads.* Anyang, Korea. In Korean.

Korea Research Institute for Human Settlements (2009). *A study on the implementation plan for exchange and cooperation projects between North and South Korea in the Demilitarized Zone.* Anyang, Korea: Korea Research Institute for Human Settlements

Korean Culture and Information Service (2010). *Facts about Korea.* Seoul, Korea: Ministry of Culture, Sports and Tourism

Kwon, S.-g. (2006). DMZ, lost living space. In Institute for North Korean Studies of Dongguk University(Ed.). The DMZ´s ecology and peace of the Korean Peninsula, pp.278–308. Seoul, Korea. Institute for North Korean Studies of Dongguk University

Landesamt Wartburgkreis (2010). Grenzwanderung in der Wartburgregion. Available from: http://www.wartburgkreis.de/gruenes_band/ [accessed 12.12.2010]

Lebegern, R. (2002). *Mauer, Zaun und Stracheldraht: Sperranlagen an der innerdeutschen Grenze 1945-1990.* Weiden, Germany: ROLE-Verlag

Lee, T.-d. (2003). A study on voluntary agreement for conserving bio-diversity . *A study on voluntary agreement for conserving bio-diversity: The case study* . Master thesis. Seoul, Korea:Seoul National University. In Korean.

Leibenath, M.,Korcelli-Olejniczak, E. & Knippschild, R. (Eds.) (2008). Cross-border governance and sustainable spatial development . *Mind the gaps!* Berlin, Heidelberg: Springer. Available from: http://www.worldcat.org/oclc/246634892

Mayring, P. (2000). Qualitative content analysis. *Forum Qualitative Social Research (FQS).* 2. Available from: http://nbn-resolving.de/urn:nbn:de:0114-fqs0002204

Mayring, P. (2002). *Einführung in die qualitative Sozialforschung . Eine Anleitung zu qualitativem Denken.* 5., überarb. und neu ausgestattete Aufl. Weinheim, Germany: Beltz. Available from: http://www.gbv.de/dms/hebis-mainz/toc/105177385.pdf

Mayring, P. (2008). *Qualitative Inhaltsanalyse . Grundlagen und Techniken.* 10., neu ausgestattete Aufl. Weinheim, Germany: Beltz. Available from: http://www.gbv.de/dms/bs/toc/567005623.pdf

McNeely, J. A. (2003). Conserving forest biodiversity in times of violent conflict. *Oryx.* 2, pp.142–152

Miller, K. R. (1996). *Balancing the scales . Guidelines for increasing biodiversity's chances through bioregional management.* Washington, DC, USA: World Resources Institute

Ministry of Environment of Republic of Korea (2003). *Synthetic report of survey results on the Korean DMZ Region.* Gwacheon, Korea: Ministy of Environment of Republic of Korea

Ministry of Environment of Republic of Korea (2005). Conservaion measures for the Korean DMZ Region. In Korean Federation for Environmental Movement(Ed.). Conservation and Sustainable Management of the DMZ and Surrounding Areas, pp.57–71. Seoul, Korea

Ministry of Environment of Republic of Korea (24.08.2005). *Implementation of the conservation measures for the Korean DMZ Region.* Gwacheon, Korea. [accessed 01.04.2010]

Ministry of Environment of Republic of Korea (2009). *ECOREA . Environemtnal Review 2009, Korea.* Gwacheon, Korea: Ministry of Environment of Republic of Korea

Ministry of Environment of Republic of Korea (10.11. 2010). *Establishment of the Korean Peninsula ecological network.* Gwacheon, Korea.

Ministry of Environment of Republic of Korea & Korea Environment Institute (2007). Policies on conservatgion of the DMZ District ecosystem. *Korea Environmental Policy Bulletin.* 1

Ministry of Unification of Republic of Korea (2005). *White paper on Korean unification 2005.* Seoul, Korea: Ministry of Unification of Republic of Korea

Molden, B. (2009). A short history of the Iron Curtain. In Wrbka, T.,Zmelik, K.& Grünweis, F. Michael(Eds.). The European Green Belt, pp.10–15. Weitra, Austria. Verlag Bibliothek der Provinz

Müller, B. (22.06.2009). Agrar-Umwelt-Maßnahmen – ihre Evaluierung und ein Weg zum institutionellen Wandel . *Dargestellt am Beispiel Deutschlands* . Doctoral Thesis. Göttingen, Germany:Georg-August-Universität zu Göttingen

NABU (2011). Official website of the NABU. Available from: http://www.nabu.de/ [accessed 10.03.2011]

NABU Sachsen (2011). Grünes Band Sachsen. Available from: http://www.nabu-sachsen.de/index.php?option=com_content&view=article&id=128&Itemid=85 [accessed 05.03.2011]

National Geographic Information Institute (2011). National atlas of Korea. Available from: http://atlas.ngii.go.kr/english/explanation/natural_1_1.jsp [accessed 03/03/2011]

Naturstiftung David (2011). Official website of the Naturstiftung David. Available from: http://www.naturstiftung.de/ [accessed 10.03.2011]

Newig, J. & Fritsch, O. (2008). *Environmental governance . Participatory, multi-lelvel - and effective?* Leipzig, Germany: Helmholtz Center for Environmental Research - UFZ

Nuissl, H. & Heinrichs, D. (2011). Fresh wind or hot air . *Does the governance discourse have something to offer to spatial planning? Journal of Planning Education and Research.* 1, pp.47–59. Available from: http://jpe.sagepub.com/content/31/1/47

Ostrom, E. (2009). A ggeneral framework for analyzing sustainability of social-ecological systems. *Science,* pp.419–422

Ostrom, E. & Janssen, M. A. (2004). Multi-level governance and resilience of social-ecological systems. In Spoor, M.(Ed.). Globalisation, poverty and conflict, pp.239–259. Dordrecht, The Netherlands. Kluwer Academic

Paavola, J. (2003/2004). Protected areas governance and justice . *Theory and the European Union's Habitats Directive. Environmental Sciences.* 1, pp.59–77

Paavola, J. (2008). *Explaining multi-level environmental governance.* Leeds, United Kingdom: Sustainability Research Institute (SRI), The University of Leeds

Paavola, J.,Kluvánková-Oravská, T. & Gouldson, A. (2008). *The Governance of biodiversity . Eco-systesm, institutions and the interplay of actors, levels, frameworks and regimes.* Leipzig, Germany: Helmholtz Center for Environmental Research - UFZ

Park, J.-s. (2007). Changes in relations between North and South Korea and conservation strategy of the DMZ. In Eco-Horizon Institute(Ed.). Environmental conservation of the DMZ and its adjacent area and future tasks, pp.105–128. Seoul, Korea. Eco-Horizon Institute

Pfennig, W. (2000). The Berlin Wall and the Korean DMZ. In Kim, C.-H.(Ed.). DMZ II - from horizontal division to vertical connection, pp.51–61. Sowha. In kor.

Pönicke, S. (2006). Grünes Band -Projekte im Naturpark Eichsteld-Hainich-Werratal. *Landschaftspflege und Naturschutz in Thüringen.* 2, p.64. In de.

Radkau, J. (2005). Germany as a focus of European "Particularities" in environmental history. In Lekan, T. M.& Zeller, T.(Eds.). Germany's nature, pp.17–32. New Brunswick, NJ. Rutgers Univ. Press

Ramirez, R. (1999). Stakeholder analysis and conflictg managment. In Buckles, D.(Ed.). Cultivating peace, pp.101–126. Ottawa, Canada. International Development Research Center; World Bank Institute

Rau, J. (2000). Besuch des koreanischen Präsidenten Kim Dae-Jung . *Tischrede von Bundespräsident Johannes Rau anlässlich eines Abendessens für den koreanischen Präsidenten Kim Dae-Jung im Schloss Bellevue*. Available from: http://www.bundespraesident.de/-,2.11984/Besuch-des-koreanischen-Praesi.htm?global.printview=2 [accessed 25.02.2011]

Renetzeder, C.,Wrbka, T. & Grünweis, F. Michael (2009). European diversity in review . *The major landscapes on the Green Belt. In* Wrbka, T.,Zmelik, K.& Grünweis, F. Michael(Eds.). The European Green Belt, pp.26–31. Weitra, Austria. Verlag Bibliothek der Provinz

Rhodes, R. A. W. (2003). *Understanding governance . Policy networks, governance, reflexivity and accountability.* London, UK: The Cromwell Press

Riecken, U. & Ullrich, K. (2009). The origins of the European Green Belt . *From the idea to the initiative. In* Wrbka, T.,Zmelik, K.& Grünweis, F. Michael(Eds.). The European Green Belt, pp.20–25. Weitra, Austria. Verlag Bibliothek der Provinz

Riecken, U.,Ullrich, K. & Lang, A. (2006). A vision for the Green Belt in Europe. In Terry, A.,Ullrich, K.& Riecken, U.(Eds.). The Green Belt of Europe, pp.3–10. Gland, Switzerland and Cambridge, UK. IUCN

Ritter, J. Lapp Peter Joachim (2007). *Die Grenze . Ein deutsches Bauwerk.* Berlin, Germany: Christoph Links Verlag

Rogers, A. (2005). A policy-relevant geography for society? In Castree, N.,Rogers, A.& Sherman, D.(Eds.). Questioning geography: fundamental debates: essays on a contested discipline, pp.277–293. Oxford, UK. Blackwell Publishing Ltd

Sandwith, T. & Lockwood, M. (2006). Linking the landscape. In Lockwood, M.,Worboys, G. L.& Kothari, A.(Eds.). Managing protected areas, pp.574–602. London, UK. Earthscan

Scharf, F. W. (1997). *Games real actors play . Actor-centered institutionalism in policy research.* Boulder, USA: Westview press

Schiffer, E. (14.07.2004). Community-based natural resource management in Namibia . *How does it influence local governance* . Doctoral Thesis. Bochum, Germany:Ruhr-Universität Bochum

Schlumprecht, H.,Ludwig, F.,Geidezis, L. & Frobel, K. (2002). E+E-Vorhaben "Bestandsaufnahme Grünes Band" . *Naturschutzfachliche Bedeutung des längsten Biotopverbundsystems Deutschlands. Natur und Landschaft.* 9/10, pp.407–414

Shin, J. H. & Lim, J. H. (2007a). Features and values of the DMZ Ecosystems. In Eco-Horizon Institute(Ed.). Environmental conservation of the DMZ and its adjacent area and future tasks, pp.3–35. Seoul, Korea. Eco-Horizon Institute

Shin, J. H.,Lim, J. H. & Chun, J. H. Unique biodiversity and landscapes of Korea's Demilitarized Zone (DMZ) . *Overview. In* South and North Korea Environmental Forum(Ed.). 2007b. International conference on Korea's DMZ conservation, pp.VI:1-16

Simoncini, R.,Borrini-Feyerabend, G. & Lassen, B. (2008). *Policy guidelines on goverance and ecosystem management for biodiversity conservation.* Thessaloniki, Greece: GEM-CON-BIO

Smith, F. M. (1994). Politics, place and German reunification . *A realignment approach. Political Geography.* 3, pp.228–244

So, B. (2005). A legal study for preservation of Korean DMZ and its vicinities with sustainable development. In Korean Federation for Environmental Movement(Ed.). Conservation and Sustainable Management of the DMZ and Surrounding Areas, pp.75–90. Seoul, Korea

So, B. (2007). Research on legal systems for the conservation and sustainable development of the De-militarized Zone. In Eco-Horizon Institute(Ed.). Environmental conservation of the DMZ and its adjacent area and future tasks, pp.89–104. Seoul, Korea. Eco-Horizon Institute

Spiegel Online (13.05.2008). From death strip to life line . *Former 'Inner German Border' provides haven for wildlife. Available from:* http://www.spiegel.de/international/germany/0,1518,552953,00.html [accessed 13.03.2011]

SRU (Sachverständigenrat für Umweltfragen) (2008). *Umweltgutachten 2008 . Umweltschutz im Zeichen des Klimawandels.* Berlin, Germany: SRU

Staatskanzlei des Landes Sachsen-Anhalt (08.06.2010). *Grünes Band und Nationales Naturerbe . Umweltminister Aeikens: Land übernimmt Flächen vom Bund* . Pressemitteilung Nr.: 307/10. Available from: http://www.asp.sachsen-anhalt.de/presseapp/data/stk/2010/307_2010_a2ce2407e2d7cb4c339c1bc8941fa19c.htm [accessed 07.03.2011]

Statistics Korea (2007). *Comparison of economic and social conditions between North and South Korea.* Seoul, Korea: Statistics Korea. In Korean.

Statistisches Landesamt, B.-W. (2011). Gemeinsames Datenangebot der Statistischen Ämter des Bundes und der Länder. Available from: http://www.statistik-portal.de/Statistik-Portal/ [accessed 12.12.2011]

Stiftung Naturschutz Thüringen (2011). Grünes Band Thüringen. Available from: http://stiftung-naturschutz-thueringen.de/index.php/gruenes-band-thueringen/ [accessed 07.03.2011]

Stoll-Kleemann, S. (2001). Barriers to nature conservation in Germany . *Explaining opposition to protected areas. Journal of Environmental Psychology,* pp.369–385

Stoll-Kleemann, S.,Bender, S.,Berghöfer, A. Bertzky Monika,Fritz-Vietta, N.,Schliep, R. & Thierfelder, B. (2006). *Linking governance and management perspectives with conservation success in protected areas and Biosphere Reserves.* Berlin, Germany: GoBi Research Group

Strauss, A. L & Corbin, J. M (1999). *Basics of qualitative research . Techniques and procedures for developing grounded theory.* 2. ed. Thousand Oaks, Calif.: Sage Publ.

Swiderska, K.,Roe, D.,Siegele, L. & Grieg-Gran, M. (2009). *The governance of nature and the nature of governance . Policy that works for biodiversity and livelihoods.* Cambridge, UK: International Institute for Environment and Development (IIED)

Terry, A.,Ullrich, K. & Riecken, U. (Eds.) (2006). The Green Belt of Europe . *From vision to reality.* Gland, Switzerland and Cambridge, UK: IUCN

The Hangyore (15.06.2004). Confrontation of political systems, 'psychological warfare,' will disappear? *The Hangyore. Available from:* http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=100&oid=028&aid=0000062573

The Hangyore (25.10.2007). Go to the German DMZ, das Grüne Band. *Hangyore 21.* Nr. 682. In kor. Available from: http://h21.hani.co.kr/arti/cover/cover_general/20951.html

The National Trust of Korea (2011). Website of the National Trust of Korea. Available from: http://www.nationaltrust.or.kr/index.asp [accessed 01.04.2011]

The World Bank (2011). Indicators. Available from: http://data.worldbank.org/indicator [accessed 18.04.2011]

Thüringer Ministerium für Landwirtschaft, N. und Umwelt (TMLNU) (2004). Das Grüne Band Thüringen . *Ein Projekt zwischen Natur und Geschichte* -. Erfurt, Germany:TMLNU

Turton, A. R. (Ed.) (2007). Governance as a trialogue . *Government society science in transition.* Berlin, Heidelberg, New York: Springer. Available from: http://www.worldcat.org/oclc/180952501

UBA (Federal Environmental Agency) (n.d.). A guide to environmental institutions in Germany

Ullrich, K. & Riecken, U. The German Green Belt. In Engels, B.,Heidrich, A.,Nauber, J.,Riecken, U.,Schmauder Heinrich& Ullrich, K.(Eds.). 2004. Perspectives of the Green Belt. Bundesamt für Naturschutz (BfN), pp.79–82

Ullrich, K.,Frobel, K. & Riecken, O. (2009). Zukunft des Grünen Bandes. *Natur und Landschaft - Zeitschrift für Naturschutz und Landschaftspflege.* 9/10, pp.457–460

Ullrich, M. (2006). *Geteilte Ansichten . Erinnerungslandschaft Deutsch-deutsche Grenze.* Berlin, Germany: Aufbau-Verlag

Valentine, G. (1997). Tell me about … . *Using interviews as a research methodology. In* Flowerdew, R.& Martin, D.(Eds.). Methods in human geography, pp.110–126. Harlow. Longman

Vogeler, I. Political division of space . *Types of international borders along the U.S.-Mexico border. In* Association of American Geographers(Ed.). 2010. Annual meeting of the West Lakes Division of the Association of Americal Geographers. Available from: http://www.uwec.edu/geography/Ivogeler/Papers/International-Borders-US%20&%20Mexico/index.htm

Wurzel, R. K. (2002). *The Europeanisation of German environmental polidy . From environmental leader to member state under pressure?* Berlin, Germany: Forchungsstelle für Umweltpolitik

Appendix I

Interview guides

Each interview guide generally consists of the themes below. The questions are not necessarily asked in the order listed. Some additional questions were prepared depending on the interviewee's area of specialty and work, and follow-up questions were made upon the interview progresses.

- Background information on an interviewee for all
  - Since when, how long worked in the organization?
  - Roles of you or your organization relating to the German Green Belt (GB) (or the Korean DMZ)

- Themes for overview experts
  - Overview of the German GB project (Not applicable to the Korean DMZ interviewees)
    Start and progress of the project
    Active or inactive period and reasons for it
  - Actors or partners
    Identification of the key actors
    Interests and roles of the key actors
    Collaboration or relationships between the key actors
    Attitude of the local people
  - Institutions
    Relevant policies or institutions
    Necessary conservation mechanism
  - Outlook
    Main goals of German GB conservation (or Korean DMZ conservation)
    Future challenges

- Themes for ground-level experts
  - Overview of the German GB project at the Länder/local level
    Start and progress of projects relating to the German GB
    How the projects are operated, in whose participation
  - Actors or partners
    Identification of the key actors at the Länder/local level
    Interests of the key actors and participation in relevant projects
    Cooperation between the key actors
    Attitude of the local people

- Institutions

  Progress of relevant conservation measures or projects in the region (e.g. protected areas, land purchase, land transfer, tourism development)

  Necessary policy measures at the federal, Länder or local level

  Success factors of the relevant projects - when applicable -

- Outlook

  Future plans or projects for the German GB in the region

Appendix II

List of Interviewees

No.	Region	Name	Organization	Interview Date (D/M/Y)
German Green Belt - Overview Experts				
1	-	Melanie Kreutz	BUND - Green Belt Project Office	17/08/2007
2	-	Sabine Kühns	BUND Berlin Office	05/08/2008
3	-	Melissa Fischer	BUND Berlin Office	05/08/2008
4	-	Uwe Riecken	Federal Agency for Nature Conservation (BfN)	08/08/2008
5	-	Barbara Engels	Federal Agency for Nature Conservation (BfN)	08/08/2008
German Green Belt - Ground-level experts				
6	Saxony (Votland)	Hellmut Naderer	NABU Regionalverband Elstertal e.V.	11/08/2008
7	Thuringia (Meiningen)	Knut Rommel	Amt für Landentwicklung und Flurneuordnung (ALF) Meiningen	20/08/2008
8	Thuringia (Meiningen)	Bernd Petzenberger	Amt für Landentwicklung und Flurneuordnung (ALF) Meiningen	20/08/2008
9	Thuringia (Leutenberg)	Christine Kober	Naturpark Thüringer Schiefergebirge/Obere Saale	21/08/2008
10	Thuringia (Erfurt)	Karin Kowol	BUND-Landesverband Thüringen	01/10/2008
11	Thuringia (Fürstenhagen)	Johannes Hager	Naturpark Werratal-Hainich-Eichsfeld	30/10/2008
12	Thuringia (Fürstenhagen)	Sabine Pönicke	Naturpark Werratal-Hainich-Eichsfeld	30/10/2008
13	Thuringia (Duderstadt)	Holger Keil	Heinz Sielmann Stiftung	30/10/2008
14	Thuringia (Erfurt)	Beate Schrader	Stiftung Naturschutz Thüringia	02/06/2009
15	Thuringia (Bad Salzungen)	Matthias Kirsten	Amt für Regionalentwichklung, Landratamt Wartburgkreis	02/06/2009
16	Bavaria (Mitwitz)	Stefan Beyer	Ökologische Bildungsstätte Oberfranken Naturschutzzentrum Wasserschloss Mitwitz	19/08/2008
17	Bavaria (Kronach)	Stefan Fredlmeier	Frankenwald Tourismus Service Center	20/08/2008
18	Bavaria (Kronach)	Dietrich Förster	Naturpark Frankenwald e.V.	21/08/2008
19	Saxony-Anhalt (Salzwedel)	Dieter Leupold	BUND Sachen-Anhalten (Projektbüro)	24/10/2008
20	Saxony-Anhalt (Binde)	Jürgen Starck	BUND Ortsgruppe Altmarkkreis	24/10/2008

Korean DMZ - Overview experts				
21	-	Hwang, Ho-Seop	Eco-horizon Institute	20/12/2007
22	-	Kim, Young-Bong	Korea Research Institute for Human Settlements	19/12/2008
23	-	Seo, Jae-Cheol	Green Korea United	26/12/2008
24	-	Bernhard Seliger	Hanns-Seidel Stiftung in Korea	29/12/2008
Korean DMZ - Ground-level experts				
25	Gyeonggi Province	Park, Eun-Jin	Gyeonggi Research Institute	16/12/2008
26	Gangwon Province	Chung, Seong-Heon	Korea DMZ Peace-Life Valley	27/12/2008

Appendix III

List of meetings and events attended during the research

Below is the list of the meetings and events relating to the German GB and the Korean DMZ, attended as discussant, observer or presenter during the research period.

Date (D/M/Y)	**Place**	**Title of Meeting or Event**	**Organizer**	
26/12/07	Seoul, Korea	Korea DMZ Forum: proposal on the establishment of an international organization in the DMZ	Gangwon Development Research Institute	Discussant
04/12/08	Berlin, Germany	Consultation meeting on the German Green Belt	Ministry of Unification, ROK	Presenter
22/12/08	Uijeongbu, Korea	Inception meeting for the project "Development of the ecological education programme in the peace-eco park in the DMZ Region"	Gyeonggi Research Institute	Discussant
13/12/09	Hof, Germany	Grenzenlos Nature 20 Jaren Grünes Band Deutschland 1989-2009 - Jubiläumsveranstaltung (Nature without border - 20 years of the German Green Belt – Anniversary event)	BUND	Observer

Appendix IV

Coalition agreement between CDU/CSU and SPD on 11 November 2005

Section on the National Natural Heritage

7.4 Nationales Naturerbe

Unser Land verfügt über ein reichhaltiges Naturerbe. Dieses wollen wir für zukünftige Generationen bewahren. Es geht um eine neue Partnerschaft von Naturschutz,nachhaltiger Landwirtschaft und umweltverträglichem Tourismus. Wir werden daher:

- gesamtstaatlich repräsentative Naturschutzflächen des Bundes (inkl. der Flächen des „Grünen Bandes“) in einer Größenordnung von 80.000 bis 125.000 Hektar unentgeltlich in eine Bundesstiftung (vorzugsweise DBU) einbringen oder an die Länder übertragen. Zur kurzfristigen Sicherung des Naturerbes ist ein sofortiger Verkaufsstopp vorzusehen;
- anstreben, den Flächenverbrauch gemäß der Nationalen Nachhaltigkeitsstrategie auf 30 ha/Tag bis 2020 zu reduzieren und für ein Flächenressourcenmanagement finanzielle Anreizinstrumente entwickeln;
- mit einer nationalen Strategie den Schutz der Natur verbessern und mit einer naturverträglichen Nutzung kombinieren;·die Natura 2000-Richtlinie im Rahmen des europäischen Rechts mit Augenmaß umsetzen;
- wo sinnvoll möglich, den Schutz naturnaher Lebensräume durch kooperative Lösungen, insbesondere den Vertragsnaturschutz, sicherstellen. Soweit notwendig, werden ordnungsrechtliche Maßnahmen eingesetzt;
- unsere Flüsse und ihre Auen als Lebensadern der Landschaft und in ihrer Funktion für einen vorbeugenden Hochwasserschutz erhalten und entwickeln.

(Source: CDU; CSU; SPD 2005)